
**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Implementation of Section 6002(b) of the)	WT Docket No. 13-135
Omnibus Budget Reconciliation Act of 1993)	
)	
Annual Report and Analysis of Competitive)	
Market Conditions With Respect to Mobile)	
Wireless, including Commercial Mobile)	
Services)	

COMMENTS OF VERIZON WIRELESS

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TABLE OF CONTENTS

SUMMARY	iii
I. CONSUMERS ARE AT THE CENTER OF A VIBRANT AND INNOVATIVE MOBILE MARKET	1
II. CONSUMERS ARE BENEFITING FROM A ROBUSTLY COMPETITIVE MARKET FOR MOBILE WIRELESS SERVICES	7
A. Consumers Continue to Benefit from Increasing Output, Declining Prices, Massive Investment, and Vigorous Competition Across Other Factors	8
1. As Wireless Prices Continue to Decline, Consumers Are Receiving More Value for Their Wireless Dollars	8
2. Consumers Continue to Benefit from a Wide Range of Diverse and Competitive Pricing Options	13
3. Carrier Competition on Non-Price Factors Remains Robust, Enhancing Consumer Welfare	17
a. Competition in Network Quality Metrics Drives Significant Carrier Investment	17
b. Rival Providers Compete to Provide Meaningful Customer Information and Quality Customer Care	20
c. Wireless Advertising Also Reveals the Fierce State of Competition	24
B. The Wireless Industry Structure Now Includes Competition from Non-Traditional Sources and Drives This Dynamic and Highly Competitive Market	25
1. Diverse Providers Now in the Marketplace Include Over 190 Facilities-Based Operators and MVNOs	25
2. Non-Traditional and Emerging Sources of Wireless Service Provide New Competitive Pressures.	29
3. Entry Conditions Are Creating Further Competitive Opportunities	31
4. The U.S. Market Compares Favorably Internationally	36
C. The Competitive Marketplace Has Led to Rising Consumer Satisfaction	40
1. Surveys Consistently Report High Numbers of Satisfied Customers	40
2. The Level of Consumer Complaints Is Minimal	41
3. Consumer Satisfaction Is Underscored by Low Barriers to Switching	41

III.	CONSUMERS BENEFIT FROM COMPETITION IN DEVICES AND APPLICATIONS	43
A.	The Wireless Device Market Is an Increasingly Important Component of Consumer Choice	43
1.	The Diverse Device Market Is Both the Product of and a Driver of More Competition	44
2.	The U.S. Market Is Where the World’s Manufacturers Come to Launch Nearly All Products	48
B.	The Dynamic Mobile Apps Marketplace Continues its Rapid Growth, Benefiting Consumers and Improving the Economy	50
IV.	CONSUMERS BENEFIT FROM COMPETITION IN THE INPUT MARKET SEGMENTS	56
A.	While Additional Spectrum Resources and Secondary Markets Have Increased Competitive Opportunities, More Spectrum Will Be Needed	56
B.	Competition in Backhaul Provides Ample Choices for Mobile Providers to Meet Their Needs	58
C.	While Important Steps Have Been Taken to Facilitate Infrastructure Deployment, More Can and Should Be Done	61
V.	THE <i>SIXTEENTH REPORT</i> SUFFERS FROM FLAWS THAT SHOULD BE CORRECTED IN THE <i>SEVENTEENTH REPORT</i>	63
A.	The <i>Sixteenth Report</i> Again Errs in Failing to Make an Effective Competition Finding	63
B.	The <i>Sixteenth Report</i> Continues to Place Undue Emphasis on Market Structure at the Expense of Market Behavior	64
1.	The <i>Sixteenth Report</i> Continues to Focus Too Heavily on HHI Measures to Assess Competitive Trends	65
2.	An Evaluation of the Effects of Consolidation Reveals Significant Consumer Welfare Benefits.....	67
3.	The Continued Exclusion of MVNOs as Distinct Market Participants Skews the <i>Sixteenth Report</i> ’s Evaluation of Concentration	68
C.	The <i>Sixteenth Report</i> ’s Spectrum Analysis Is Flawed	70
D.	The <i>Sixteenth Report</i> Deemphasizes Falling Prices	72
E.	The <i>Sixteenth Report</i> Again Errs in Using Profitability an Index of Competition	73
VI.	CONCLUSION	75

SUMMARY

The mobile wireless marketplace is even more robust, competitive, and innovative than it was last year and the year before. Output is increasing, prices are decreasing, and there is massive, ongoing investment and innovation that is fueling even more competition – all to the benefit of the U.S. wireless consumer. Competition is being driven not only by mobile carriers but from a large and increasing variety of device and application suppliers, resellers, over-the-top providers, and other entrants across the mobile ecosystem, enabling consumers to “mix-and-match” services, devices and applications that are both complements and substitutes. Indeed, not only is the U.S. wireless consumer experience the best in the world, it is constantly getting better. The facts are clear – the mobile wireless market is “effectively competitive” for the American consumer.

The market for mobile wireless services itself is highly competitive. Mobile data traffic has soared more than 275% since 2010. And prices keep falling. Between 2005 and 2012, the wireless CPI fell 8.0%, while the overall CPI for all items increased 16.7%. For data services, the price declines were even more dramatic: the effective price per megabyte (“MB”) fell 50% from \$0.06 per MB in 2011 to \$0.03 per MB in 2012. Consumers can choose from an increasingly diverse array of innovative pricing plans and options, such as postpaid plans, prepaid offerings, tiered pricing plans, unlimited and capped usage plans, and shared and multi-device plans.

Carrier competition on non-price factors – particularly network enhancements – is also improving consumer welfare. In 2012 alone, mobile carrier capital expenditures topped \$30 billion, a nearly \$5 billion increase – almost 20% – from the year prior. These investments have poured into 4G network deployments and, as a result, the U.S. now has nearly 50% of the

world's LTE subscribers despite having only 5% of the global mobile consumers. This staggering level of investment is driven by competition, and consumers are the beneficiaries. As a result, U.S. consumer satisfaction levels remain strong: a recent survey reflects that 91% of wireless phone customers are highly satisfied with their wireless phone service.

The dynamic consumer experience for wireless services is supported by numerous and diverse participants – from mobile carriers and MVNOs to non-traditional and emerging sources of competition across the mobile ecosystem – making a carrier-centric competitive analysis anachronistic. The MVNO segment has continued to grow, with TracFone ranking fifth among all providers of mobile service. Consumers build their wireless experience to meet their needs by choosing among a vast array of devices, apps and other services, and non-traditional sources of connectivity are expanding: Consumers are now making phone calls using over-the-top mobile apps riding on a data plan or over WiFi networks, thereby displacing traditional voice services. And increasingly ubiquitous WiFi is serving as both as complement to and a substitute for traditional mobile broadband services.

The market's competitiveness is also evidenced by the ability of new providers to enter as well as the attractiveness the market holds for new investment. The billions of dollars that SoftBank and Deutsche Telekom are investing in Sprint and T-Mobile underscore that major international firms are confident of their ability to compete successfully in the U.S. wireless market. While more spectrum is needed, the AWS and 700 MHz auctions, together with the removal of restrictions from the BRS/EBS, 2 GHz MSS, and WCS bands, have provided opportunities for entry and capacity to address growing spectrum needs. And the robust secondary market in which literally thousands of spectrum transactions occur each year among

small, medium and large carriers also allows spectrum to flow to its best and most efficient use, drives further investment, again all to the benefit of consumers and the economy.

The U.S market also compares favorably to wireless markets in other areas of the world. Not only does the U.S. invest more per subscriber (\$94 compared to the non-U.S. average of \$16), U.S. consumers pay less (one-third of the EU average for voice service), experience faster connection speeds (nearly twice as fast as the EU average), and enjoy broader LTE coverage.

Growth and diversity in mobile devices and applications are expanding consumer choice, fueling more demand, triggering investment in more robust mobile broadband networks, and leading to even more vigorous competition. As of year-end 2012, there were 326.5 million wireless devices in the U.S., a penetration rate of 102% that includes smartphones, tablets, USB modems, mobile hotspots, and other connected devices. Consumers also benefit from “mix and match” competition, as devices and apps provide innovation and options that can serve as a substitute for or a complement to today’s wireless services.

Competition in mobile broadband input markets for spectrum, backhaul, and infrastructure also fuels rivalry in the larger wireless services sector. As the June 14, 2013 Presidential Memorandum, *Expanding America’s Leadership in Wireless Innovation*, observed, more spectrum is needed. Maximizing the amount of licensed spectrum made available in the upcoming 600 MHz incentive auction, proceeding with the auction of an additional 65 MHz as required by the Spectrum Act, and continuing to identify spectrum that can be reallocated from federal to commercial use will help address the growing needs of wireless consumers. There is also extensive and growing competition for mobile backhaul services from a large array of operators, including ILECs, CLECs, cable MSOs, fiber-based providers, microwave operators, and resellers. And while important steps have been taken to facilitate infrastructure deployment,

the Commission can and should do more, including taking actions to expedite siting, particularly on federal lands, and to facilitate DAS and small cell deployment.

Finally, as the Commission incorporates these facts and trends into the development of the *Seventeenth Report*, it should correct the analytical errors in the *Sixteenth Report* that painted an incorrect portrait of the wireless marketplace. In particular, the Commission must declare the mobile wireless market “effectively competitive,” as compelled by the facts and required by Congress. The *Seventeenth Report* also should correct the prior *Report*’s undue focus on HHI measures at the expense of market performance evidence, which shows consumers are benefitting from increasing output, declining prices, and massive investment.

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COMMENTS OF VERIZON WIRELESS

Verizon Wireless submits these initial comments in response to the Commission’s *Public Notice* seeking input and data on mobile wireless competition for the Seventeenth Annual Report on the State of Competition in Mobile Wireless (“*Seventeenth Report*”).¹

I. CONSUMERS ARE AT THE CENTER OF A VIBRANT AND INNOVATIVE MOBILE MARKET.

In today’s U.S. mobile market, output is increasing, prices are decreasing, and there is massive, ongoing investment and innovation. Competitive forces now come not just from mobile carriers but from devices, applications, over-the-top providers, and other non-traditional sectors across the mobile ecosystem, enabling consumers to “mix-and-match” services or applications that are both complements and substitutes. U.S. consumers enjoy the world’s most vigorously competitive mobile market, as demonstrated by remarkable results across virtually every metric:

¹ Wireless Telecommunications Bureau Seeks Comment on the State of Mobile Wireless Competition, *Public Notice*, WT Docket No. 13-135, DA 13-1139 (WTB May 17, 2013) (“*Public Notice*”).

- Consumer mobile data traffic has skyrocketed more than 275% since 2010.² By way of comparison, U.S. consumers accessed 50% more data per connected device than did consumers in the European Union (“EU”) last year, and in 2013 Americans are expected to use nearly twice as much data per connection as EU consumers.³
- Data prices have plummeted 93% over the past five years to only \$0.03 per megabyte.⁴ Overall, wireless Consumer Price Index “CPI” continued to fall in 2012, down 0.8%,⁵ as the U.S. CPI for all items increased by 1.7%.⁶ Since 2006, wireless CPI has *fallen* 8.0%,⁷ while the CPI for all items has *increased* 16.7%.⁸
- Last year, the U.S. wireless carriers made \$30.1 billion in incremental capital investment,⁹ and the United States accounted for 25% of the world’s wireless capital investment.¹⁰ In 2012, U.S. wireless carriers invested \$94 per subscriber, whereas non-U.S. providers invested \$16 per subscriber.¹¹
- While U.S. consumers represent only 5% of the world’s wireless connections,¹² they comprise nearly 50% of the world’s LTE connections.¹³ 4G LTE coverage extends to

² See ROBERT F. ROCHE & LIZ DALE, CTIA, CTIA’S WIRELESS INDUSTRY INDICES 186 (May 2013) (“CTIA 2013 WIRELESS INDUSTRY INDICES”); CTIA, SEMI-ANNUAL WIRELESS INDUSTRY SURVEY RESULTS DECEMBER 1985 – DECEMBER 2012 9, http://files.ctia.org/pdf/CTIA_Survey_YE_2012_Graphics-FINAL.pdf (“CTIA SEMI-ANNUAL WIRELESS INDUSTRY”).

³ See GSMA, MOBILE WIRELESS PERFORMANCE IN THE EU & THE US (May 2013) (“GSMA MOBILE WIRELESS PERFORMANCE”), available at http://www.gsmamobilewirelessperformance.com/GSMA_Mobile_Wireless_Performance_May2013.pdf.

⁴ See Visage, Infographic: The Staggeringly Huge Future of Mobility, <http://visagemobile.com/mobilityblog/2012/09/06/infographic-the-staggeringly-huge-future-of-mobility> (last visited Jun. 4, 2013) (“Visage Infographic”).

⁵ See CTIA 2013 WIRELESS INDUSTRY INDICES at 220.

⁶ See U.S. DEP’T OF LABOR, BUREAU OF LABOR STATISTICS, CONSUMER PRICE INDEX: ALL URBAN CONSUMERS – (CPI-U), U.S. CITY AVERAGES, ALL ITEMS, <ftp://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt> (“CPI – ALL ITEMS”).

⁷ See CTIA 2013 WIRELESS INDUSTRY INDICES at 217-20.

⁸ See CPI – ALL ITEMS.

⁹ See CTIA 2013 WIRELESS INDUSTRY INDICES at 105.

¹⁰ Steve Largent, CEO, CTIA – The Wireless Association, “How to Actually Get Americans Online” (Jan. 31, 2012), available at <http://blog.ctia.org/2013/01/31/how-to-actually-get-americans-online/> (citing Bank of America Merrill Lynch).

¹¹ See CTIA, 50 Wireless Quick Facts (“50 Wireless Quick Facts”), available at, <http://www.ctia.org/advocacy/research/index.cfm/AID/10377> (last visited June 4, 2013) (citing CTIA-THE WIRELESS ASSOCIATION, CTIA’S WIRELESS INDUSTRY SUMMARY REPORT, YEAR-END 2012 RESULTS (2013); EMMET KELLY, ET AL., BANK OF AMERICA MERRILL LYNCH, EUROPEAN TELECOMS MATRIX Q1 2012 (March 30, 2012) (“EUROPEAN TELECOMS MATRIX Q1 2012”).

¹² Press Release, CTIA, CTIA-The Wireless Association® Semi-Annual Survey Shows U.S. Wireless Providers Invested Almost Six Times More Per Subscriber than Rest of World (May 2, 2013), available at <http://www.ctia.org/media/press/body.cfm/prid/2261> (“CTIA May 2013 Press Release”).

86% of Americans, with 16 providers offering LTE service in 2013.¹⁴ In 2012, the average mobile data connection speed for North America was 2.6 Mbps, the fastest in the world, nearly twice that available in Western Europe, and over five times the global average.¹⁵

- More than half of all U.S. mobile subscribers – approximately 125 million – now own smartphones, representing a nearly 30% increase from 2012 and a 99% increase from 2011.¹⁶

The facts are clear – U.S. consumers are at the center of a dynamic, chaotic, innovative wireless marketplace that is connecting everything and everyone in new, exciting ways.

U.S. Consumers Are Seizing Control Over Their Mobile Experience. Just a few years ago, a consumer typically purchased a basic feature phone from an operator’s store, selecting primarily based on network coverage as well as voice and text packages. Few consumers knew or even cared which operating system or applications were loaded on their phone. Contrast that with today, where consumers decide how to build their own mobile broadband experience – across networks, devices, operating systems, and applications – tailored to their individualized needs and usage. As the Commission observed last year, “[e]ach of the segments in the mobile wireless ecosystem has the potential to affect competition by providers and consumer demand for mobile wireless services.”¹⁷

¹³ See Wireless Intelligence, *US, South Korea and Japan Account for 87% of Global LTE Connections*, <https://wirelessintelligence.com/analysis/2012/07/us-south-korea-and-japan-account-for-87-of-global-lte-connections/343/> (last visited June 3, 2013).

¹⁴ See Mobile Future, United States of Wireless Infographic, *available at* <http://mobilefuture.org/resources/united-states-of-wireless-infographic/> (last visited June 6, 2013).

¹⁵ See OFFICE OF SCIENCE AND TECHNOLOGY POLICY & THE NATIONAL ECONOMIC COUNCIL, *FOUR YEARS OF BROADBAND GROWTH 6* (June 2013), http://www.whitehouse.gov/sites/default/files/broadband_report_final.pdf.

¹⁶ ComScore, *Mobile Future in Focus 2013* 11 (Feb. 2013).

¹⁷ Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, *Sixteenth Report*, 28 FCC Rcd 3700, 3730 ¶ 5 (2013) (“*Sixteenth Report*”).

In choosing a wireless service provider, consumers today see vigorous competition across pricing packages, broadband speeds, coverage, and network quality. At the same time, consumers increasingly focus their attention more on a particular operating system or a specific device and less on the identity of the underlying service provider. By one estimate, over a third of shoppers select a phone first, and then consider the desired carrier and other factors.¹⁸ Still other consumers opt for a tablet or other connected device with WiFi connectivity, eschewing licensed mobile wireless service altogether. Another subset are buying e-readers and other devices provided, and branded, directly by a retailer without user knowledge of the underlying wireless provider supplying the connectivity.

Today's market fosters "mix-and-match" competition enabling consumers to choose from an expanding field of innovative options. Traditional market boundaries are quickly eroding, as participants from all quarters of the mobile ecosystem enter one another's lines of business, compete to provide value, and win customers. "Multiple companies that are not normally thought of as competitors but as complements, and that do not technically operate in the same product markets, challenge one another through the creation of competing value propositions offered to the same set of consumers."¹⁹ For example, consumers can now make phone calls using an over-the-top mobile app riding on a data plan connection or over WiFi, thereby displacing traditional voice services.²⁰ Similarly, consumers are increasingly using the many

¹⁸ GOOGLE AND COMPETE, WIRELESS SHOPPER STUDY at 8 (Apr. 2013), *available at* http://ssl.gstatic.com/think/docs/how-do-people-shop-for-mobile-phones-research_research-studies.pdf.

¹⁹ JONATHAN SALLET, THE CREATION OF VALUE: THE BROADBAND VALUE CIRCLE AND EVOLVING MARKET STRUCTURES 12 (Apr. 4, 2011) ("BROADBAND VALUE CIRCLE"), <http://www.annenberglab.com/viewresearch/27>.

²⁰ Paul Kapustka, "Can Over-the-Top Voice Services Free You From Mobile Minute Charges?" PCWorld, July 9, 2012,

(continued on next page)

chatting and messaging apps instead of the traditional SMS/MMS services provided by carriers.²¹ And increasingly ubiquitous WiFi is both a complement and a substitute for traditional mobile broadband services.

The fact that multiple industry segments drive consumer decisions deeply undercuts traditional carrier-centric views regarding analysis of the wireless marketplace. As one report recently concluded, “[a]lthough it is certainly understandable that the modern telecommunications intelligentsia would see broadband as the center of the Internet ecosystem ... it is not. For purposes of competition analysis, at least, broadband is a complement among complements, a module among modules.”²² This fundamental shift is transforming the mobile market and puts consumers even more at the epicenter.

The Mobile Ecosystem Drives Constant Innovation. One consequence of today’s consumer-driven mobile marketplace is that competitors must consistently find new ways to differentiate their offerings, either alone or with partners, making the market especially dynamic. “In innovation markets, firms compete ... primarily [] by making investments intended to create entire new categories of products, or to substantially reduce the costs of making existing ones.”²³

That is clearly the case for the mobile market. Operators continue to invest billions into their networks, and roll out new service plans and offerings. Indeed, the fact that T-Mobile is

http://www.pcworld.com/article/258978/can_over_the_top_voice_services_free_you_from_mobile_minutes_charges.html.

²¹ David Meyers, “Chat apps have overtaken SMS by message volume...,” GIGAOM, Apr. 29, 2013, <http://gigaom.com/2013/04/29/chat-apps-have-overtaken-sms-by-message-volume/>.

²² Jeffrey A. Eisenach, AEI Economics Studies: *BROADBAND COMPETITION IN THE INTERNET ECOSYSTEM*, Oct. 2012 at 18, available at http://www.aei.org/files/2012/10/17/-broadband-competition-in-the-internet-ecosystem_164734199280.pdf. (Last visited June 13, 2013). (“*BROADBAND COMPETITION IN THE INTERNET ECOSYSTEM*”).

²³ *BROADBAND COMPETITION IN THE INTERNET ECOSYSTEM* at 14.

backed by Deutsche Telekom and that another foreign firm, SoftBank, is in a bidding war to acquire Sprint Nextel and Clearwire is recent evidence of sophisticated and deep-pocketed global investors' confidence in their ability to compete in the U.S. marketplace. Investment and innovation extend throughout all the key segments of the mobile market. The two most popular handsets – Apple iPhone 5 and Samsung Galaxy S III – were introduced last year, just as Windows and Research in Motion/BlackBerry rolled out new and improved operating systems, generating new devices and capabilities. Consumers have nearly tripled the amount of time they spend each month on mobile apps and can now select from over 2.7 million apps from 28 different app stores.²⁴ And last year, the “Internet of Things,” or machine-to-machine communications (“M2M”), became increasingly prevalent with new partnerships among networks, developers, and myriad vertical industries.²⁵ With wireless connections built into electronics, appliances, cameras, health care devices, cars, and power grids, M2M technology is making the world safer and more efficient. As Dan Mead, President and CEO of Verizon Wireless, highlighted, consumers will “us[e] the LTE network to manage [their] life and to control everything in [their] home.”²⁶

The Commission’s Review of Mobile Competition Must Reflect Consumers’

Experience. Today, consumers are the beneficiaries of the precise outcome that one expects from a rivalrous, competitive market: constant innovation, substantial investment, falling prices,

²⁴ Henry Blodget and Alex Cocotas, Business Insider: *The Future of Mobile* at slide 75 (March 2013) (“The Future of Mobile”), available at <http://www.businessinsider.com/the-future-of-mobile-slide-deck-2013-3#-75> (last visited June 13, 2013); see also *50 Wireless Quick Facts*.

²⁵ See Bill Wasik, *Welcome to the Programmable World*, WIRED, May 14, 2013, available at <http://www.wired.com/gadgetlab/2013/05/internet-of-things/all/>.

²⁶ Remarks of Dan Mead, Jefferies Global Technology Media and Telecom Conference, at 1312 available at http://www22.verizon.com/investor/DocServlet?doc=vz_jefferies_transcript_2013.pdf (May 8, 2013).

expanding output, and entry by new providers in various market segments. And service providers compete vigorously, both among themselves *and* with producers of complements and substitutes, to generate value and win the favor of consumers. These facts lead to one inexorable conclusion: the mobile wireless market is “effectively competitive” for the American consumer.

Indeed, not only is the U.S. wireless consumer experience the best in the world, it is constantly getting better. As Lowell McAdam, Chairman and Chief Executive Officer of Verizon, recently noted, “[o]ur industry has only just begun to figure out how to use technology to solve the world’s big challenges.”²⁷ The future promises more innovation and investment – from VoLTE to connected devices, LTE Multicast to the next great app – as consumers demand more, and rely more, on wireless-based services.

II. CONSUMERS ARE BENEFITING FROM A ROBUSTLY COMPETITIVE MARKET FOR MOBILE WIRELESS SERVICES

More than ever before, the mobile market is experiencing exploding demand, lower prices, and massive investment that are driving innovation from a diverse industry structure that includes competition from non-traditional sources across the wireless ecosystem. The result of this competitive and dynamic mobile wireless market is rising consumer satisfaction, reduced complaints, and increasing consumer loyalty. Taken together, these factors demonstrate that U.S. consumers benefit from the most competitive wireless market in the world.

²⁷ Lowell McAdam, Chairman and CEO, Verizon, “Power Technology, Powerful Answers,” Remarks at the Consumer Electronics Show 2013, at 3 (Jan. 8, 2013), *available at* <http://about.verizon.com/index.php/about/leadership-team/2013-international-consumer-electronics-show>.

A. Consumers Continue to Benefit from Increasing Output, Declining Prices, Massive Investment, and Vigorous Competition Across Other Factors

As data traffic continues to explode and minutes of use (“MOUs”) are rising,²⁸ consumers are enjoying declining prices and an expanding suite of plan options and investments in network performance, coverage, customer care and advertising.

1. As Wireless Prices Continue to Decline, Consumers Are Receiving More Value for Their Wireless Dollars

Consumers continue to benefit from decreases in overall wireless service pricing. Both mobile voice and data prices continued to decline in 2012, as overall usage, especially on the data side, continued to rise. In fact, wireless service prices have declined nearly every year since 1997.²⁹ And while prices keep falling, U.S. consumers are receiving more value for their wireless dollars. Looking forward, analysts predict continued price declines as providers look to differentiate themselves in an increasingly competitive market.³⁰

An examination of two key pricing indicators relied on by the Commission in prior competition reports³¹ – the Wireless Telephone Services component of the Consumer Price Index

²⁸ See *infra* Section I; see also CTIA 2013 WIRELESS INDUSTRY INDICES at 2-3 (noting that reported data traffic for 2012 was 1.468 trillion MB, up from 866.9 billion MB in 2011, and MOUs for 2012 totaled 2.299 trillion, up from 2.295 trillion in 2011).

²⁹ CTIA 2013 WIRELESS INDUSTRY INDICES at 212, 214-20 & Table 81. The wireless CPI remained essentially unchanged from previous years in 2002, 2006, and 2008.

³⁰ See, e.g., SIMON FLANNERY ET AL., MORGAN STANLEY RESEARCH, TELECOM SERVICES, 1Q13 PREVIEW: STRENGTH IN WIRELESS MARGINS, BUT NOT MUCH ELSE 8 (Apr. 17, 2013); SIMON FLANNERY ET AL., MORGAN STANLEY RESEARCH, TELECOM SERVICES, CTIA 2013: PLACING BETS ON THE NEXT WIRELESS GROWTH OPPORTUNITY 1 (May 28, 2013); see also Liz Gannes, *Expensive Mobile Data Plans Will Soon Be a Relic of the Past, Says Cisco CEO*, ALLTHINGS.D, May 29, 2013, available at <http://allthingsd.com/20130529/expensive-mobile-data-plans-will-soon-be-a-relic-of-the-past-says-cisco-ceo/>.

³¹ See *Sixteenth Report*, 28 FCC Rcd at 3875 ¶ 265.

(“wireless CPI”) and the per-minute price of voice service – shows that mobile wireless prices continued to decline in 2012. Studies also show that data pricing is falling precipitously as well.

Wireless CPI fell 0.8% from December 2011 to December 2012,³² while the same time, the CPI for all items increased by 1.7 %.³³ Indeed, as shown in the chart below, from December 2005 to December 2012, the wireless CPI fell 8.0%,³⁴ while the overall CPI for all items increased 16.7%.³⁵ And the trends since 1997 (the first year in which the government tracked wireless CPI) are even more dramatic: wireless CPI declined by more than 40%, while overall CPI increased by more than 43%.³⁶ Together, these facts demonstrate that wireless service provides real value to consumers.

³² See CTIA 2013 WIRELESS INDUSTRY INDICES at 220.

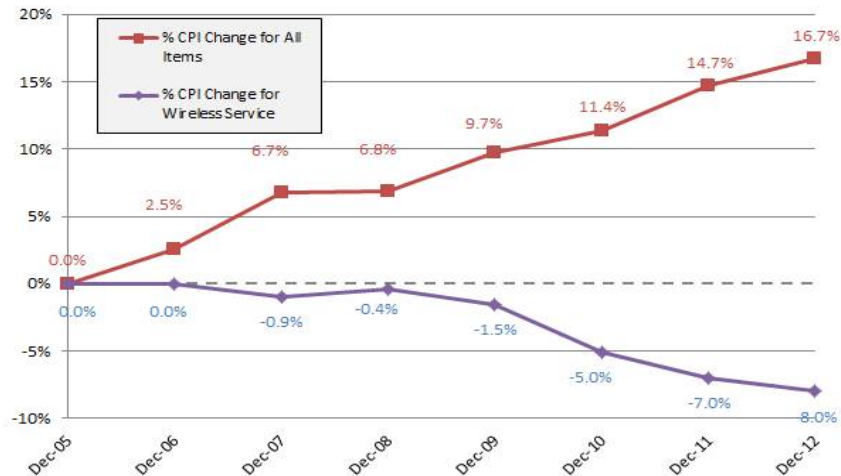
³³ See CPI – ALL ITEMS.

³⁴ See CTIA 2013 WIRELESS INDUSTRY INDICES at 217-20.

³⁵ See CPI – ALL ITEMS.

³⁶ See CTIA 2013 WIRELESS INDUSTRY INDICES at 214-20; CPI – ALL ITEMS

CPI v. Wireless CPI (changes in Consumer Price Index)



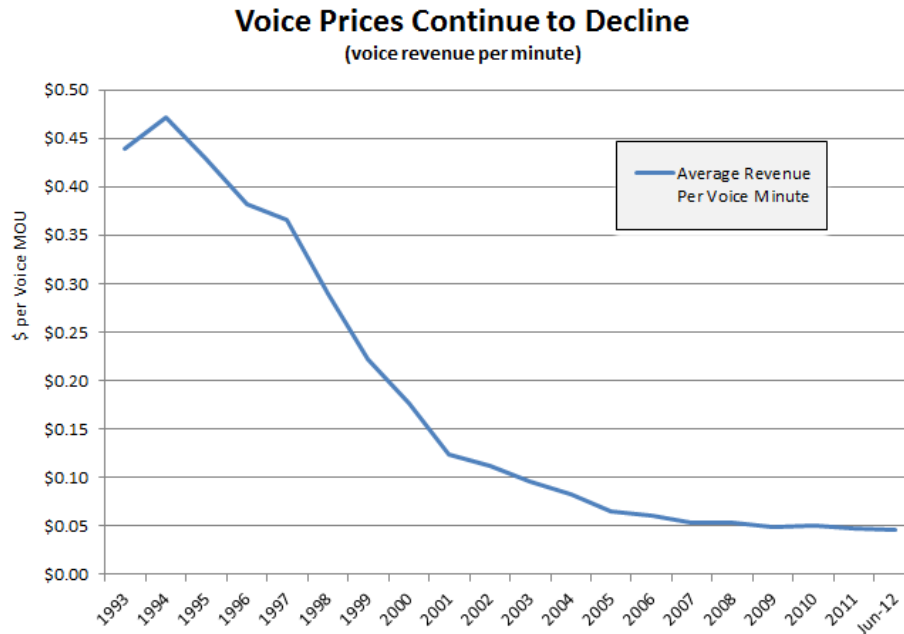
Source: CTIA 2013 Wireless Industry Indices and U.S. Dep't of Labor³⁷

Similarly, Voice Revenue per Minute (“RPM”), which the Commission has used in prior reports as a proxy for mobile voice prices, fell 2.1% from December 2011 to June 2012 to \$0.046.³⁸ Overall, Voice RPM has declined from more than \$0.40 in 1993³⁹ to the current \$0.05 (as rounded to the nearest cent).

³⁷ CTIA 2013 WIRELESS INDUSTRY INDICES at 217-20; CPI – ALL ITEMS.

³⁸ *Compare Sixteenth Report*, 28 FCC Rcd at 3877, Table 13 with CTIA 2013 WIRELESS INDUSTRY INDICES at 93 (Table 35), 98 (Table 36), 149 (Table 53), 167 (Table 61). To generate Voice RPM, the Commission subtracts wireless data revenues (assumed to be the same percentage of wireless data revenues in CTIA’s measure of total service revenues) from the Average Local Monthly Bill (“ALMB”) reported by CTIA, then divides that number by CTIA’s average MOUs per month. See *Sixteenth Report*, 28 FCC Rcd at 3877 n.828. While CTIA has historically reported industry-wide voice ALMB and monthly MOUs in its annual survey, as of year-end 2012 CTIA no longer tracks ALMB. See CTIA 2013 WIRELESS INDUSTRY INDICES at 147-48. As a result, Voice RPM data is only available through June 2012, the last period for which ALMB was reported.

³⁹ See *Sixteenth Report*, 28 FCC Rcd at 3877, Table 13.



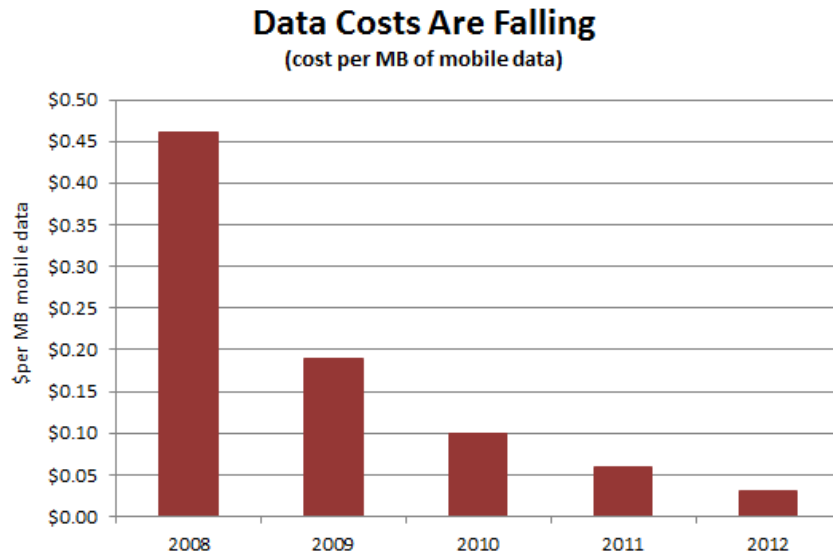
Source: CTIA 2013 Wireless Industry Indices and *Sixteenth Report*

For data services, the price declines were even more dramatic: the effective price per megabyte (“MB”) fell 50% from \$0.06 per MB in 2011 to \$0.03 per MB in 2012.⁴⁰ These price declines occurred while data usage soared more than 69% over the same period from 866.9 billion MB in 2011 to 1.468 trillion MB in 2012.⁴¹ Overall, the price per MB has fallen more than 93% in just five years, from \$0.46 in 2008 to \$0.03 in 2012.⁴²

⁴⁰ See *Visage Infographic*; see also WANDERA, 5 THINGS MOBILITY MANAGERS NEED TO KNOW ABOUT REDUCING MOBILE DATA EXPENSES 1 (2013), http://www.wandera.com/wp-content/uploads/2013/02/Wandera_WP01213.pdf (“Average monthly data costs in the US are 1.04 GB x \$0.03 = \$31.2.”) (citing *Visage Infographic*).

⁴¹ CTIA 2013 WIRELESS INDUSTRY INDICES at 3.

⁴² See *Visage Infographic*. As the *Sixteenth Report* noted, it is “no longer possible to calculate unit prices for text messaging based on industry data collected by CTIA,” because CTIA no longer reports a breakout of text messaging revenues from overall wireless data service revenues. As a result, the FCC has “discontinue[d] reporting this particular pricing indicator.” See *Sixteenth Report*, 28 FCC Rcd at 3879 ¶ 269. With respect to usage, annual text messages declined 4.9% from 2.303 trillion in 2011 to 2.19 trillion in 2012. CTIA 2013 WIRELESS INDUSTRY INDICES at 2.



Source: Visage Infographic

Of note, a study by iGR completed late last year found that competition for data-only plans is keeping prices low.⁴³ Specifically, iGR studied the rate plans for 60 U.S. mobile operators. iGR discovered that “market competition ... has driven prices lower” for data-only plans.⁴⁴ iGR also found generally that “the Top 4 U.S. mobile operators charge less per MB than the overall average” rates of all 60 mobile operators studied, and “the largest operators tend to give the best deals (from a dollars per MB perspective) to their subscribers.”⁴⁵

⁴³ iGR, U.S. MOBILE DATA PRICING SURVEY: HIGHS, LOWS, MEANS AND MEDIANS 2 (Third Quarter 2012) (“*iGR DATA SURVEY*”), available at <http://competitivecarriers.org/wp-content/uploads/2012/09/iGR-Mobile-Data-Pricing-Survey-Exec-Summary.pdf>.

⁴⁴ *iGR DATA SURVEY* at 1-2.

⁴⁵ *iGR DATA SURVEY* at 2.

2. Consumers Continue to Benefit from a Wide Range of Diverse and Competitive Pricing Options

As indicated by a recent survey, nearly 70% of consumers consider their wireless service to be “excellent” or “good” in light of the price they pay for those services.⁴⁶ These prices are the result of an increasingly diverse array of innovative pricing plans and options offered by providers, such as postpaid plans, prepaid offerings, tiered pricing plans, unlimited and capped usage plans, and shared and multi-device plans. Plans also vary based on a wide variety of factors, such as voice, messaging, data, tethering, WiFi and hotspot connections, and international calling, among other things. Consequently, consumers can select the competitive pricing options which best suit their individual needs. A wide variety of resources also is available to consumers to help them determine which services and pricing plans best meet their needs. In addition to information that carriers provide, there are numerous third-party websites, consumer reporting groups, publications and other groups that provide detailed rate and service information.⁴⁷

First, consumers continue to benefit from the traditional postpaid pricing model, as many wireless providers diversify their postpaid offerings and introduce new plans to attract and retain customers. For example, more carriers are offering no annual contract postpaid plans in addition to plans with specified terms.⁴⁸ In addition, some carriers are separating the sale of the handset

⁴⁶ McLaughlin & Associates and Penn Schoen Berland, 2013 National Consumer Survey, *available at* <http://www.mywireless.org/media-center/data-center/2013-national-survey/> (last visited May 2, 2013).

⁴⁷ See, e.g., <http://www.consumerreports.org/>; <http://www.jdpower.com/>; <http://www.deadcellzones.com/>; <https://www.billshrink.com/>; <http://www.myrateplan.com/>; and <http://phonestatistics.com/>.

⁴⁸ See, e.g., T-Mobile, A Wireless Plan Has Never Been Such a Simple Choice: Shop Plans, *available at* <http://www.t-mobile.com/shop/plans/individual-plans.aspx> (last visited June 15, 2013); Aio Wireless, *available at* <http://www.aiowireless.com/home.html> (last visited June 15, 2013); The Inquisitr, AT&T No Contract Service Aio (continued on next page)

from the rate plan, which can provide value for customers who want to use entry-level smartphones or for BYOD (“bring your own device”) customers.⁴⁹

Second, family and shared plans (typically a postpaid offering), in which customers can attach multiple devices to a plan that has larger usage buckets, are becoming an increasingly cost-effective and popular option for consumers.⁵⁰ These plans allow customers to take advantage of significant discounts for each added device,⁵¹ and help wireless carriers build customer support, particularly as customers add new devices like tablets to their households.⁵²

Third, tiered plans provide consumers with a wide range of choices. Since the introduction of tiered pricing plans three years ago, the percentage of tiered plans in comparison to all data plans has increased worldwide from 4% to 55%.⁵³ Service providers continue to expand the variety of competitive tiered pricing plans, including unlimited options, providing consumers with the flexibility to choose the best plan for their needs.⁵⁴

Wireless Price In Cell Carrier Comparison (May 10, 2013), *available at* <http://www.inquisitr.com/656750/att-no-contract-service-aio-wireless-price-in-cell-carrier-comparison/> (last visited June 15, 2013).

⁴⁹ See, e.g., T-Mobile, Bring your own phone to T-Mobile and save up to \$49.99/month, *available at* <http://explore.t-mobile.com/phone-sim-card> (last visited June 15, 2013); Aio Wireless, Love Your Phone? Just Add Aio, *available at* <http://www.aiowireless.com/shop/byod.html> (last visited June 15, 2013).

⁵⁰ One analyst noted recently that 30% of accounts were on Verizon Wireless’ Share Everything plans after only nine months since their launch. SIMON FLANNERY ET AL., MORGAN STANLEY RESEARCH, VERIZON COMMUNICATIONS: QUICK COMMENT: RECORD WIRELESS MARGIN, STRONG ADDS, WIRELINE REMAINS SOFT 3 (Apr. 18, 2013).

⁵¹ See Thomas Gryta, Wall Street Journal, Finding Family Values in Wireless Data Plans (Aug. 23, 2012), *available at* <http://blogs.wsj.com/digits/2012/08/23/finding-family-values-in-wireless-data-plans/> (last visited June 15, 2013).

⁵² SIMON FLANNERY ET AL., MORGAN STANLEY RESEARCH, TELECOM SERVICES: 1Q13 PREVIEW: STRENGTH IN WIRELESS MARGINS, BUT NOT MUCH ELSE 25 (Apr. 17, 2013).

⁵³ CISCO VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2012-2017, at 17 (Feb. 6, 2013), (“CISCO 2012-2017 FORECAST”), *available at* http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf (last visited June 15, 2013).

⁵⁴ Phone Statistics, Compare Individual Wireless Phone Pricing (Mar. 28, 2012), *available at* <http://phonestatistics.com/2012/03/individual-wireless-pricing-2/> (last visited June 15, 2013).

Fourth, prepaid pricing options continue to be popular with consumers, with low cost, better value and control on spending the key factors why postpaid customers are switching to prepaid.⁵⁵ Although the growth rate of prepaid customers is slowing over time, and the universal service Lifeline re-certification process will likely affect prepaid subscribership in the short term, prepaid is still expected to take approximately 29% market share by 2018, up from 26% at year-end 2012.⁵⁶

Consequently, the prepaid market segment has become even more competitive as additional providers roll out new services and offerings. In addition to the four national carriers introducing or expanding their prepaid lineups, numerous new MVNOs (*e.g.*, Fee-domPOP, Ting, and RadioShack, to name a few) are bringing greater competitive pressure in the marketplace.⁵⁷ For example, in 2012 and 2013 significant changes were made to the prepaid plans of Verizon Wireless, Sprint Nextel, T-Mobile, AT&T, Page Plus, Simple Mobile, Virgin Mobile, and Boost Mobile.⁵⁸ These changes included additional tiers of pricing options, rate

⁵⁵ SIMON FLANNERY ET AL., MORGAN STANLEY RESEARCH, TELECOM SERVICES: PREPAID ALPHAWISE SURVEY – IS THE PREPAID PARTY OVER? at 38 (Dec. 10, 2012). (“MORGAN STANLEY PREPAID ALPHAWISE SURVEY”).

⁵⁶ MORGAN STANLEY PREPAID ALPHAWISE SURVEY at 5; SIMON FLANNERY ET AL., MORGAN STANLEY RESEARCH, TELECOM SERVICES: 1Q13 PREVIEW: STRENGTH IN WIRELESS MARGINS, BUT NOT MUCH ELSE 26 (Apr. 17, 2013).









⁵⁷ MORGAN STANLEY PREPAID ALPHAWISE SURVEY at 5.

⁵⁸ See, *e.g.*, Verizon Wireless News Center, Smartphone Options for the Budget-Minded (May 15, 2013), *available at* <http://news.verizonwireless.com/news/2013/02/new-prepaid-smartphone-plans.html> (last visited June 15, 2013); Mike Dano, FierceWireless, Sprint Launches Prepaid LTE Service Through Virgin, Boost (Feb. 25, 2013), *available at* <http://www.fiercewireless.com/story/sprint-launches-prepaid-lte-service-through-virgin-boost/2013-02-25> (last visited June 15, 2013); Press Release, AT&T, AT&T Launches New, Affordable Prepaid Smartphone Rate Plan (Oct. 1, 2012), *available at* <http://www.att.com/gen/press-room?pid=23404&cdvn=news&newsarticleid=35436&mapcode=consumer|mobile-devices> <http://www.fiercewireless.com/story/sprint-launches-prepaid-lte-service-through-virgin-boost/2013-02-25> (last visited June 15, 2013); Press Release, Page Plus Cellular, Page Plus Cellular Plans Get More Data, Lower Overage Rates (Nov. 9, 2012), 9, 2012), *available at* <https://www.pagepluscellular.com/news/2012/page-plus-cellular-plans-get-more-data-lower-coverage-rates/> <http://www.fiercewireless.com/story/sprint-launches-prepaid-lte-service-through-virgin-boost/2013-02-25> (last visited June 15, 2013); Evan Rodgers, The Verge, Simple Mobile's Prepaid High-Speed Unlimited Plan Drops to \$50, Speeds Rumored To Increase (Aug. 1, 2012), *available at* <http://www.theverge.com/2012/8/1/3212495/simple-mobile-prepaid-high-speed-unlimited-50> (last visited June 15, 2013). (continued on next page)

reductions, new international calling services, increases in data allotments, and different plans for smartphones versus feature phones. Interestingly, the growing availability of prepaid offerings at “big box” stores, which are often frequented by cost-conscious consumers, also has had a substantial impact on prepaid purchasing habits.⁵⁹ As shown below, a wide range of prepaid options are available to consumers:⁶⁰

Exhibit 30

Key Prepaid Smartphone Service Plans by Carrier or Prepaid Brand – Including Data, MOUs, and SMS Details

CARRIER	TIER	MONTHLY FEE	DATA (GB)	PRICE / GB	TEXT	MINUTES	NETWORK	KEY COMMENTARY
	1	\$50	1.0	\$50	Unlimited	Unlimited	3G - CDMA	Includes Muve Music
	2	\$60	2.5	\$24	Unlimited	Unlimited	3G - CDMA	Includes Muve Music
	3	\$70	5.0	\$14	Unlimited	Unlimited	3G - CDMA	Includes Muve Music
	4	\$50	1.0	\$50	Unlimited	Unlimited	4G / LTE	Limited Offerings Given Footprint
	1	\$50	Unlimited	-	Unlimited	Unlimited	3G - CDMA	
	2	\$60	Unlimited	-	Unlimited	Unlimited	3G - CDMA	For Blackberry / Incl. Rhapsody Music
	1	\$40	0.25	\$160	Unlimited	Unlimited	4G / LTE	-
	2	\$50	2.5	\$20	Unlimited	Unlimited	4G / LTE	-
	3	\$55	Unlimited	-	Unlimited	Unlimited	4G / LTE	Limited time Promotion
	4	\$60	5	-	Unlimited	Unlimited	4G / LTE	Incl. Rhapsody
	5	\$70	Unlimited	-	Unlimited	Unlimited	4G / LTE	Incl. Video On Demand & Rhapsody Music
	1	\$65	1	\$65	Unlimited	Unlimited	3G - GSM	-
	1	\$80	1.0	\$80	Unlimited	Unlimited	3G - CDMA	-
	2	\$80	2.0	\$40	Unlimited	Unlimited	3G - CDMA	For New Customers Until Jan. 31
	1	\$55	2.5	\$22	Unlimited	Unlimited	3G - CDMA	Android Unlimited
	2	\$60	2.5	\$24	Unlimited	Unlimited	3G - CDMA	Blackberry
	1	\$35	2.5	\$14	Unlimited	300	3G - CDMA	Tethering Avail. for \$15
	2	\$45	2.5	\$18	Unlimited	1200	3G - CDMA	Tethering Avail. for \$15
	3	\$55	2.5	\$22	Unlimited	Unlimited	3G - CDMA	Tethering Avail. for \$15
	1	\$30	5.0	\$6	Unlimited	100	3G - GSM	For New Customers* / Tethering for \$15
	2	\$50	0.1	\$500	Unlimited	Unlimited	3G - GSM	Tethering Avail. for \$15
	3	\$60	2.0	\$30	Unlimited	Unlimited	3G - GSM	Tethering Avail. for \$15
	4	\$70	5.0	\$14	Unlimited	Unlimited	3G - GSM	Tethering Avail. for \$15
	1	\$45	Unlimited	-	Unlimited	Unlimited	MVNO	-
	1	\$40	0.25	\$160	Unlimited	Unlimited	MVNO	-
	2	\$50	Unlimited	Unlimited	Unlimited	Unlimited	MVNO	-
Average Promotion		\$41						

Source: Company Data, Morgan Stanley Research. Note: * T-Mobile promotion is available online on T-Mobile or Walmart's website or in-store at Walmart.

2013); Press Release, Boost Mobile, Boost Mobile Lowers Unlimited Plans For On-Time Payments (Mar. 26, 2012), available at <http://newsroom.boostmobile.com/news/news/boost-mobile-lowers-unlimited-plans-time-payments> (last visited June 15, 2013); Zach Honig, Engadget, Virgin Mobile Adds \$40 payLo Unlimited Plan For Talk and Text Types (May 21, 2012), available at <http://www.engadget.com/2012/05/21/virgin-mobile-paylo/>.

⁵⁹ MORGAN STANLEY PREPAID ALPHAWISE SURVEY at 10.

⁶⁰ MORGAN STANLEY PREPAID ALPHAWISE SURVEY at 19.

3. Carrier Competition on Non-Price Factors Remains Robust, Enhancing Consumer Welfare

While carriers compete aggressively on price, the Commission has rightly recognized that mobile wireless service providers “compete on many other dimensions”⁶¹ – including network coverage and quality. Customers also choose carriers based on customer care and advertising campaigns. As described below, these vectors are marked by robust competition aimed at improving consumers’ experience.⁶²

a. Competition in Network Quality Metrics Drives Significant Carrier Investment

Consumers consistently rank network performance and coverage as key variables in choosing a service provider.⁶³ Indeed, in noting that “[n]etwork investment remains a centerpiece of service providers’ efforts to improve their customers’ mobile wireless service experience,”⁶⁴ the Commission appropriately acknowledged carriers’ significant capital expenditures aimed at enhancing network performance and coverage. Wireless carrier advertising campaigns also tout providers’ coverage, reliability, and the speed of their respective networks.

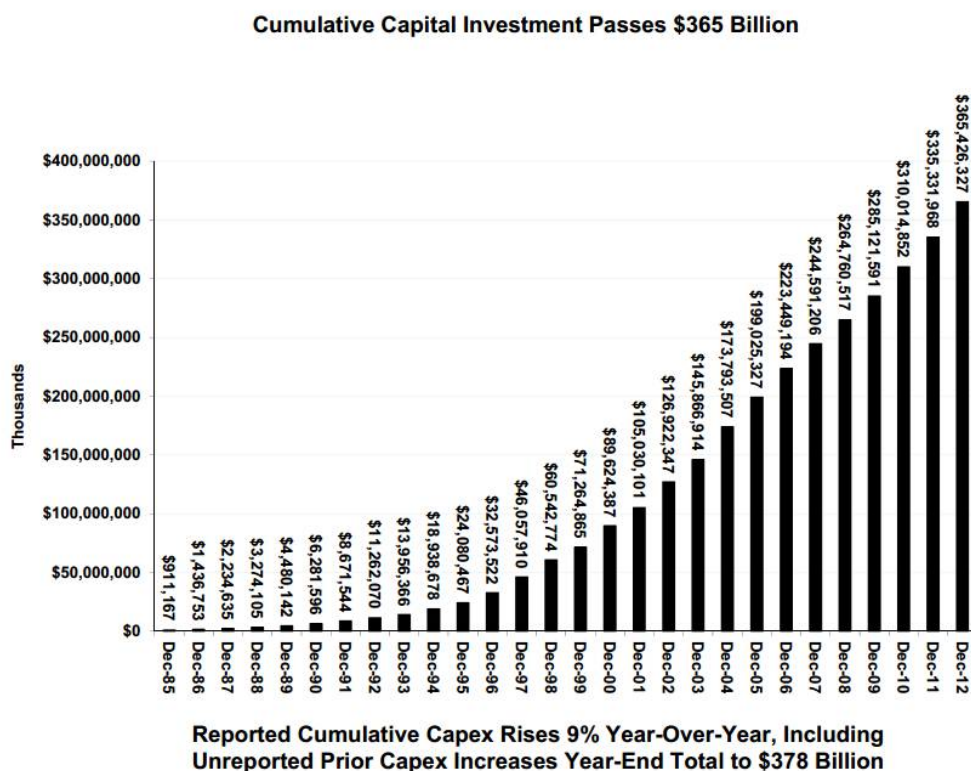
⁶¹ Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, *Fifteenth Report*, 26 FCC Rcd 9664, 9733 ¶ 103; (“*Fifteenth Report*”); *see also* *Sixteenth Report*, 28 FCC Rcd at 3821 ¶ 180.

⁶² *Sixteenth Report*, 28 FCC Rcd at 3821 ¶ 180.

⁶³ *See, e.g.,* comScore, MOBILE FUTURE IN FOCUS 2013: KEY INSIGHTS FROM 2012 AND WHAT THEY MEAN FOR THE COMING YEAR 21 (March 2013), *available at* http://www.comscore.com/Insights/Presentations_and_Whitepapers/2013/2013_Mobile_Future_in_Focus3 (showing that wireless network quality is the most important factor in consumer decision making).

⁶⁴ *Sixteenth Report*, 28 FCC Rcd at 3821 ¶ 181.

As the chart below illustrates, wireless providers have collectively spent hundreds of billions of dollars improving and expanding their networks to compete for customers – a total of more than \$365 billion in cumulative capital investment since 1985.⁶⁵



In 2012, mobile carrier capital expenditures topped \$30 billion, a nearly \$5 billion increase – almost 20% – from the year prior.⁶⁶ In fact, with only 5% of wireless subscribers, U.S. mobile carriers invested 25% of the world’s total wireless capital expenditures.⁶⁷ These investments have poured into 4G network deployments and, as a result, the U.S. now has 50% of

⁶⁵ CTIA SEMI-ANNUAL WIRELESS INDUSTRY SURVEY at 5₂

⁶⁶ *Id.* at 12₄

⁶⁷ CTIA May 2013 Press Release.

the world's LTE subscribers despite having only 5% of the global mobile consumers.⁶⁸ This staggering level of investment is driven by competition, and consumers are the beneficiaries.

Verizon Wireless has been a market leader in network investments. Since 2000, Verizon Wireless has invested over \$80 billion in its network,⁶⁹ with capital expenditures of over \$26 billion in the last three years alone – during a period of significant economic difficulties.⁷⁰ In 2012, Verizon Wireless invested nearly \$9 billion.⁷¹ And in the first three months of 2013, Verizon Wireless has already spent nearly \$2 billion in network investments.⁷²

Verizon Wireless has the largest 4G LTE network in the world.⁷³ Since December 2010, Verizon Wireless has deployed LTE coverage to 497 markets covering more than 287 million people as of May 20, 2013.⁷⁴ Today, Verizon Wireless' 4G LTE network covers over 95% of its 3G network footprint⁷⁵ and will blanket the entire footprint by year's end.⁷⁶

⁶⁸ See John Walls, *U.S. Leading Smartphone Revolution*, WP BRANDCONNECT (April 11, 2013), available at <http://www.washingtonpost.com/sf/brand-connect/wp/2013/04/11/u-s-leading-smartphone-revolution/>.

⁶⁹ See Verizon Wireless, *About Verizon Wireless – Network*, available at <http://aboutus.verizonwireless.com/technology/network/> (last visited June 3, 2013).

⁷⁰ Verizon, *VERIZON – 2012 ANNUAL REPORT 37* (March 2013), available at http://www22.verizon.com/investor/DocServlet?doc=vz_ar_2012.pdf.

⁷¹ Verizon, *VERIZON COMMUNICATIONS FINANCIAL AND OPERATING INFORMATION AS OF MARCH 31, 2013 13* (April 2013), available at http://www22.verizon.com/investor/DocServlet?doc=vz_2013_q1_foi.pdf.

⁷² Verizon, *VERIZON COMMUNICATIONS FINANCIAL AND OPERATING INFORMATION AS OF MARCH 31, 2013 13* (April 2013), available at http://www22.verizon.com/investor/DocServlet?doc=vz_2013_q1_foi.pdf.

⁷³ See Tom Pica, *4G LTE: A 2013 Roadmap (Update)*, Verizon Wireless News Center (March 21, 2013), available at <http://news.verizonwireless.com/news/2013/01/verizon-4G-LTE-473-markets.html>.

⁷⁴ See Verizon Wireless, *Verizon Wireless 4G LTE Markets*, available at <http://news.verizonwireless.com/LTE/Markets.html> (last visited June 2, 2013).

⁷⁵ See Verizon Wireless, *About Verizon Wireless – Network*, available at <http://aboutus.verizonwireless.com/technology/network/> (last visited June 3, 2013).

⁷⁶ See Verizon Wireless, *Verizon Wireless 4G LTE Markets*, available at <http://news.verizonwireless.com/LTE/Markets.html> (last visited June 2, 2013).

Verizon Wireless is not alone in its wireless capital expenditures. Since coverage and performance remain key elements of competition, small, regional, and national carriers alike continue to invest substantially in their networks.⁷⁷ In turn, these investments are driving growth in downstream markets, devices, infrastructure, and other segments – all to the benefit of U.S. consumers. As one wireless analyst aptly noted, “The clear winner in this capital expenditure race is obvious: The American customer, who will get better, faster, more powerful wireless services in more places.”⁷⁸

b. Rival Providers Compete to Provide Meaningful Customer Information and Quality Customer Care

Customer information and customer care are additional, differentiating elements of carrier competition. A recent study found that customer care is essential to developing customer loyalty, and that customer loyalty is key to customer retention: “True loyalty creates customers

⁷⁷ See, e.g., Kevin Bostic, *AT&T Expands 4G LTE Coverage to 16 New US Markets*, APPLEINSIDER (May 29, 2013), available at <http://appleinsider.com/articles/13/05/29/att-expands-4g-lte-coverage-to-16-new-us-markets>; Roger Cheng, *AT&T Adds Six LTE markets, Unveils Plan for 77 More*, CNET NEWS (April 10, 2013), available at http://news.cnet.com/8301-1035_3-57578823-94/at-t-adds-six-lte-markets-unveils-plan-for-77-more/; Press Release, Sprint, *Sprint 4G LTE Available in More Than 100 Additional Cities in the Coming Months*, (Sept. 10, 2012), available at http://newsroom.sprint.com/article_display.cfm?article_id=2382; Phil Goldstein, *T-Mobile to Expand MetroPCS Footprint by 100M POPs*, FIERCE WIRELESS (May 15, 2013), available at <http://www.fiercewireless.com/story/t-mobile-expand-metropcs-footprint-100m-pops/2013-05-15>; Phil Goldstein, *Leap to expand LTE coverage up to 65M POPs by 2014*, FIERCE WIRELESS (May 15, 2012), available at <http://www.fiercewireless.com/story/leap-expand-lte-coverage-65m-pops-2014/2012-05-15>; Press Release, Clearwire, *Clearwire Reports First Quarter 2012 Results* (Apr. 26, 2012), available at <http://corporate.clearwire.com/releasedetail.cfm?ReleaseID=667819>; Press Release, C Spire Wireless, *C Spire Wireless to Expand 4G LTE Service in Mississippi This Summer* (May 27, 2013); Press Release, U.S. Cellular, *U.S. Cellular Announces Next Markets To Receive 4G LTE Services In 2013* (Feb. 14, 2013), available at <http://www.uscellular.com/about/press-room/2013/USCellular-Announces-Next-Markets-to-Receive-4GLTE-Service-in-2013.html>. See also *New GSMA Report Highlights Widening Gap Between European and United States Mobile Markets*, FIERCE WIRELESS (May 30, 2013), available at <http://www.fiercewireless.com/press-releases/new-gsma-report-highlights-widening-gap-between-european-and-united-states> (comparing U.S. and European Union wireless capital expenditures and noting that “[m]obile investment in the United States has outpaced that in Europe, with capital expenditure in the U.S. growing by 70 per cent since 2007 while declining in the EU and the gap continues to widen.”)

⁷⁸ See Roger Entner, *Carriers Double Down on Network Investments, but Need Regulatory Support*, FIERCE WIRELESS (Nov. 13, 2012), available at <http://www.fiercewireless.com/story/entner-carriers-double-down-network-investments-need-regulator-support/2012-11-13>.

who are forgiving when things go wrong and resistant to competitive offers.”⁷⁹ The 2013 WDS Loyalty Audit “also debunks some of the common myths around customer churn, in particular that customers switch primarily because of price, availability of devices or network coverage” and finds that “[i]n fact, the data shows that if a customer doesn’t feel valued then they are more than twice as likely to be at risk of switching carriers.”⁸⁰ WDS also found that “[g]etting right any kind of care interaction is critical. A customer who rates the performance of customer care as ‘excellent’ is over three times more likely to be secured beyond 12 months than someone who rates the experience as ‘poor.’”⁸¹ Carriers have every incentive to inform and serve their customers – and are in fact doing so – in order to compete and win in the marketplace.

Carrier-Provided Information. Wireless carriers covering almost 97% of consumers have voluntarily adopted CTIA’s “Consumer Code for Wireless Service.”⁸² Under the Code, participating carriers give consumers information they need to help them to make informed choices, and to ensure they have information regarding their wireless service plans and coverage maps.⁸³ The Code covers voice, messaging, and data services for both prepaid and postpaid wireless customers.⁸⁴ Consistent with the Code, mobile wireless carriers offer customers

⁷⁹ Andrew Burger, *Report: 36% of Wireless Customers Considering Switch*, TELECOMPETITOR, Mar. 21, 2013, available at <http://www.telecompetitor.com/report-36-of-wireless-customers-considering-switch/>.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² See CTIA, Consumer Code Participants, available at http://www.ctia.org/consumer_info/service/index.cfm/AID/10623 (last visited June 1, 2013).

⁸³ CTIA, CTIA Consumer Code for Wireless Service, at 1-2, available at http://files.ctia.org/pdf/The_Code.pdf (last visited June 1, 2013) (“*CTIA Consumer Code*”). In 2004, the largest national carriers, including Verizon Wireless, also agreed to follow certain uniform nationwide consumer protection practices in conducting their businesses. This agreement, known as the Assurance of Voluntary Compliance (“AVC”), also helps to ensure that consumers are provided with information covering advertising, point of sale rate and term disclosures, coverage map information, cancellation and trial periods for phone usage, and customer billing formats.

⁸⁴ *CTIA Consumer Code*.

extensive plan-related information in their stores and on their websites, ranging from pricing and usage figures to detailed coverage maps.

Mobile providers have also supplied wireless consumers with a variety of tools to monitor their accounts and their service use through their mobile devices, on the Internet, and through text alerts.⁸⁵ Following extensive discussions with numerous stakeholders, the Code was updated to include a provision requiring wireless carriers to provide free usage alerts to postpaid customers with limited allowances when they approach and exceed their voice, messaging, and data allowances, and to notify customers without an international roaming plan whose devices have registered abroad and who may incur charges for international usage. Carriers provided at least two of these alerts to customers by October 17, 2012, and all of these alerts by April 17, 2013.⁸⁶ The FCC’s website reflects that those commitments were met,⁸⁷ and now “approximately 97 percent of wireless customers across the country are protected.”⁸⁸

Verizon Wireless distinguishes itself by adopting policies that extend beyond the requirements of the *CTIA Consumer Code*. For example, Verizon Wireless began providing its customers with multiple proactive alerts even before the October 2012 deadline specified in the

⁸⁵ See Brian Josef, *How to Manage Your Wireless Account Using Your Wireless Device*, CTIA BLOG, July 20, 2011, available at <http://blog.ctia.org/2011/07/20/how-to-manage-your-wireless-account-using-your-wireless-device/>; (last visited June 13, 2013); see also, Verizon, Tools for Monitoring Usage, available at http://support.verizonwireless.com/information/usage_tools.html (last visited June 4, 2013) (describing how to access usage via short codes); Cellcom Inc., Support, available at <http://www.cellcom.com/faq.html> (last visited June 4, 2013) (MyCellcom allows users to view recent invoices, make payments and check minutes, data and messaging use); SouthernLINC, MyLINC, available at <http://www.southernlinc.com/customersupport/> (last visited June 4, 2013) (online account access allows users to view their usage activity and make payments online); U.S. Cellular, My Account, available at <https://customer.uscellular.com/uscellular/myaccount/login.jsp> (last visited June 5, 2013) (“Login” and there one can view usage, pay bills and manage service options).

⁸⁶ *CTIA Consumer Code* at 5.

⁸⁷ See FCC, FCC Encyclopedia, Bill Shock: Wireless Usage Alerts for Consumers, available at <http://www.fcc.gov/bill-shock-alerts> (last visited May 31, 2013).

⁸⁸ *Id.*

Code. Verizon Wireless currently provides customer alerts by text message and email: (i) for data customers who have usage based data pricing or a Share Everything® Plan, when the customer reaches 75%, 90% and 100% of his/her monthly domestic allowance, and also at 90% of each overage allowance; and (ii) for voice and messaging customers who have usage based pricing, when the customer reaches 75%, 90%, 100% and 105% of his/her monthly domestic allowance.⁸⁹ These alerts are provided free of charge.⁹⁰

Customer Care. Mobile wireless carriers also are keenly aware of the need to compete to provide the very best customer care. In a 2012 study on the importance of customer service, J.D. Power and Associates found that “[t]he importance of customer satisfaction can perhaps be best described when considering how it is linked to common business goals such as loyalty – specifically, levels of customer recommendation or intent to repurchase. Without exception, J.D. Power finds a strong relationship across industries between the level of customer satisfaction and demand-side benefits, such as repurchase intent rate.”⁹¹

Verizon Wireless, for example, has invested heavily in customer service operations to meet customers’ needs, with over 1900 company-operated stores and kiosks, 34 customer services center locations, and 24/7 account access.⁹² Customers also may utilize self-serve

⁸⁹ See Verizon, Tools for Monitoring Usage, available at http://support.verizonwireless.com/information/usage_tools.html (last visited June 4, 2013). In addition, during international travel, Verizon Wireless provides welcome text messages upon arrival, which provide important information such as standard rates for voice, data and text messaging. For customers who use data globally, Verizon Wireless sends a text and email notification before the customer incurs a significant overage charge. *Id.*

⁹⁰ *Id.*

⁹¹ J.D. Power and Associates, Beyond Satisfaction: J.D. Power 2012 Customer Service Champions, Brands That Deliver Service Excellence To Maximize Business Results, Executive Summary, March 2012, at 3, available at <https://pictures.dealer.com/jdpower/12ea79a70a0d02b7014443193be6f066.pdf>

⁹² See Verizon Wireless, About Verizon Wireless, available at http://aboutus.verizonwireless.com/company/customer_satisfaction/; Verizon Wireless, Commitment to Customer (continued on next page)

options, including on-line, handset-accessible, or interactive voice response call-in systems, to address their needs.⁹³ Verizon Wireless also offers workshops on a broad variety of topics both online and in stores.⁹⁴

c. Wireless Advertising Also Reveals the Fierce State of Competition

As further evidence of the robustly competitive wireless market, providers engage in aggressive marketing efforts to inform consumers about their service offerings. Wireless companies spend enormous amounts on web, print, and broadcast advertising, as is evident from any online experience, looking at any newspaper, or watching television. National wireless providers as well as many mid-sized carriers and MVNOs are major advertisers. According to Nielsen, in 2012, “wireless service telephone” was the fourth highest-spending product category for advertising in the U.S. economy, spending \$2.75 billion.⁹⁵ These significant efforts in using advertising to reach potential as well as existing customers about the benefits of service offerings underscore the intensity of wireless companies’ competitive efforts.

Satisfaction FAQs,
[http://support.verizonwireless.com/clc/faqs/Wireless%20Service/faq_commitment_to_customer_satisfaction.html?gclid=8&faq=8&lid=sayt&sayt=customer service center*](http://support.verizonwireless.com/clc/faqs/Wireless%20Service/faq_commitment_to_customer_satisfaction.html?gclid=8&faq=8&lid=sayt&sayt=customer%20service%20center) (last visited June 15, 2013).

⁹³ See *id.*

⁹⁴ See Verizon Wireless, Wireless Workshops, *available at* <https://vzwworkshops.verizonwireless.com/vzwworkshops/nos/wws/DisplayWWSOverview.action> (last visited June 1, 2013).

⁹⁵ In 2012, advertising spending by wireless providers trailed only the automotive, quick service restaurant, and automotive dealerships categories. Nielsen Company, Nielsen Tops of 2012: Advertising Dec. 17, 2012, *available at* <http://www.nielsen.com/us/en/newswire/2012/nielsen-tops-of-2012-advertising.html>; see also *Sixteenth Report*, 28 FCC Rcd at 3849 ¶ 232 (Regarding wireless service provider advertising from 2009-2011: “Despite the drop in measured advertising spending, wireless service providers continued to spend more on advertising agencies than firms in many other industries.”).

B. The Wireless Industry Structure Now Includes Competition from Non-Traditional Sources and Drives This Dynamic and Highly Competitive Market

The dynamic consumer experience for wireless services is supported by numerous and diverse participants – from mobile carriers and MVNOs to emerging non-traditional sources of competition across the mobile ecosystem – all striving to attract and keep customers in the face of a multitude of alternative providers. This market structure produces the rivalrous competition described above, expanding consumer options and improving the mobile experience.

1. Diverse Providers Now in the Marketplace Include Over 190 Facilities-Based Operators and MVNOs

The market for mobile wireless service is populated by a wide range of providers offering services under a variety of business models. There are 191 facilities-based mobile providers⁹⁶ and countless mobile virtual network operators (“MVNOs”). And alternative sources of connectivity are expanding, including the proliferation of WiFi. Highlighted below are the roles of key provider segments in this robust market.

Nationwide Facilities-Based Providers Enhance Service Quality and Intensify Competition. There are four “nationwide” providers – Verizon Wireless, AT&T, Sprint Nextel, and T-Mobile – each offering facilities-based service to the vast majority of Americans. These providers vie aggressively with one another and with others, competing on price and service plans, on network coverage and next-generation capabilities, on device and operating system availability, on customer care, and more.

⁹⁶ See INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, FCC, LOCAL TELEPHONE COMPETITION: STATUS AS OF JUNE 30, 2012, at 29, Table 18 (Jun. 2013), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-321568A1.pdf (“Dec. 2011 Local Competition Data”).

Moreover, there is recent evidence of providers' significant confidence that they can compete successfully in this dynamic market characterized by increasing output, decreasing prices, and massive investment. For example, earlier this year Deutsche Telekom's T-Mobile acquired MetroPCS. As the Commission concluded, that acquisition will "enhance competition and provide important benefits for consumers,"⁹⁷ including "the facilitation of Long Term Evolution ('LTE') deployment, the expansion of the MetroPCS brand into new geographical markets, the development of a more robust, national network, improved quality of service, and the strengthening of the fourth largest nationwide service provider's ability to compete in the mobile broadband services market."⁹⁸ Similarly, SoftBank's proposed investment in Sprint Nextel and Clearwire further demonstrates that the U.S. market is dynamic and attractive for entry by foreign companies – a clear sign of a competitive sector.⁹⁹

As the nationwide providers have continued to grow and attract customers, consumer welfare has increased. The following chart shows that the growth of the nationwide providers has coincided with massive increases in output and precipitous declines in pricing:

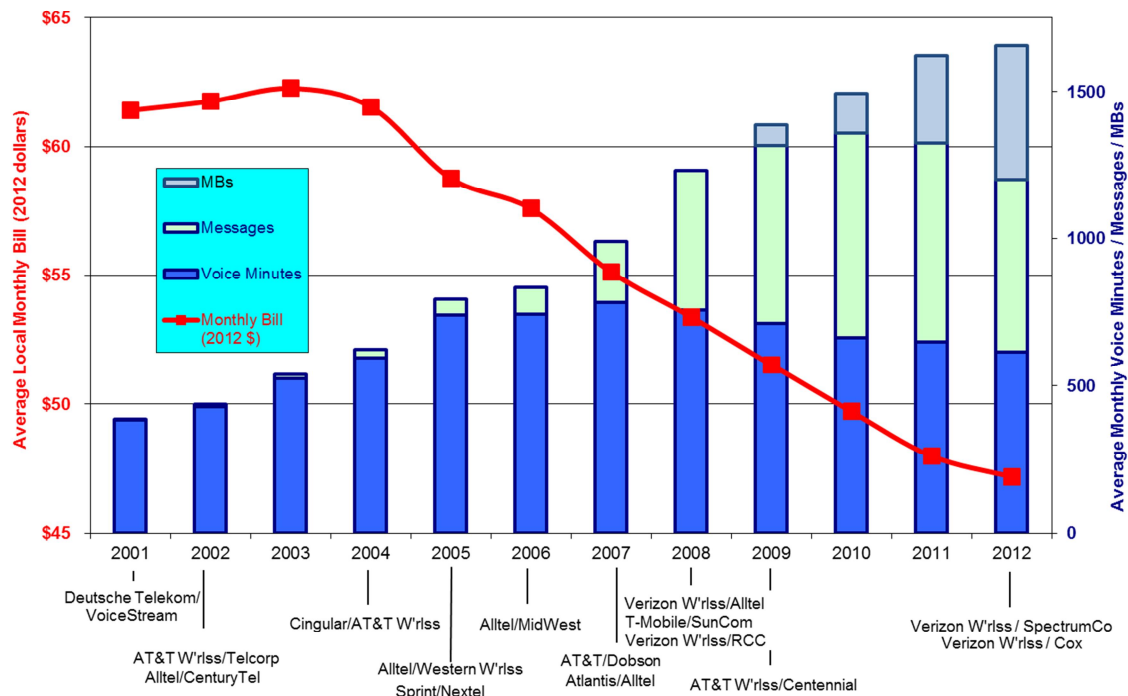
⁹⁷ Applications of Deutsche Telekom AG, T-Mobile USA, Inc., and MetroPCS Communications, Inc., *Memorandum Opinion and Order and Declaratory Ruling*, 28 FCC Rcd 2322 at 2348 ¶ 74 (2013).

⁹⁸ *Id.* at 2323 ¶ 2.

⁹⁹ See Softbank and Sprint Seek FCC Consent to the Transfer Of Control of Various Licenses, Leases, and Authorizations From Sprint to Softbank, and to the Grant of a Declaratory Ruling Under Section 310(B)(4) of the Communications Act, *Public Notice*, 27 FCC Rcd 14924 (2012).

Wireless Services: Increasing Use, Decreasing Price

Source: CTIA's Wireless Industry Indices YE-2012 Report



Over the same period, there has been a downward trajectory of the wireless CPI.¹⁰⁰ Thus, the combination of greater geographic coverage and network investment has enabled the nationwide providers to achieve improvements in service quality, enhancements in functionality, and the deployment of more robust and ubiquitous wireless broadband services, even as pricing has continued to drop.¹⁰¹

Other Facilities-Based Providers Expand Consumer Choice. The wireless sector is not limited to the four “nationwide” providers. Multiple carriers play a significant role in shaping

¹⁰⁰ See Gerald R. Faulhaber et al., *Assessing Competition in U.S. Wireless Markets: Review of the FCC's Competition Reports*, 64 Fed Comm. L. J. 319 (2012); see also *Sixteenth Report*, 28 FCC Rcd at 3876, Table 37.

¹⁰¹ The Commission has previously acknowledged that “operators with larger footprints can achieve certain economies of scale and increased efficiencies compared to operators with smaller footprints,” and that such efficiencies permitted carriers to introduce new service options, “reducing prices to consumers.” Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, *Sixth Report*, 16 FCC Rcd 13350, 13362-63, n.62 (2001) (“*Sixth Report*”) (internal citations omitted).

the competitive industry and the consumer experience. For example, Leap Wireless has a significant presence across the United States, and U.S. Cellular is a leading provider in several regions across the country. MetroPCS, recently acquired by T-Mobile, will continue to operate as a separate brand, now across the entire T-Mobile footprint. Clearwire, moreover, has leveraged its industry-leading spectrum position to deploy an extensive 4G network and, in addition to retail offerings, has fostered multiple new entrants by pursuing a wholesale strategy with MVNOs. Competition is also driven by numerous smaller facilities-based carriers, including C Spire, Cincinnati Bell Wireless, NTELOS, Pocket Communications, and SouthernLINC, to name a few.

MVNOs Provide Additional Competition and Innovation. MVNOs also play an important role in wireless competition and innovation. As the *Sixteenth Report* observed, MVNOs contribute to both price and non-price rivalry, “increas[ing] competition and consumer welfare by providing service to various market segments using the capacity of the hosting facilities-based provider and the marketing strategy and distribution network of the MVNO.”¹⁰²

The MVNO segment has continued to grow, accounting for 10% of mobile wireless subscriptions according to the FCC.¹⁰³ MVNO TracFone ranks fifth among *all* providers of mobile service, facilities-based or otherwise.¹⁰⁴ All told, although the precise number is difficult to ascertain, the Commission has previously recognized estimates of between 40 and 60 MVNOs

¹⁰² *Sixteenth Report*, 28 FCC Rcd at 3741 ¶ 35.

¹⁰³ As of December 31, 2011, the resale segment comprised 10% of mobile telephony subscribers, up from 9% as of December 31, 2010. See *Dec. 2011 Local Telephone Competition Data* at 29, Table 18; and 28, Table 17.

¹⁰⁴ See *Sixteenth Report*, 28 FCC Rcd at 3740 ¶ 34.

operating in the U.S. market.¹⁰⁵ MVNOs not only provide wireless services targeted to specific demographics or submarkets, but are even creating new and innovative service models, including mobile broadband only, specialized data-only, and machine-to-machine (“M2M”) offerings, all of which compete for customers with the facilities-based carriers.¹⁰⁶

2. Non-Traditional and Emerging Sources of Wireless Service Provide New Competitive Pressures.

In addition to the provider segments described above, the Commission’s competitive analysis must also account for other non-traditional and emerging suppliers of connectivity and competition. These offerings, both current and planned, enable consumers to “mix-and-match” services or applications that are both complements and substitutes, confirming the presence and growth of additional substantial competitive opportunities in the sector.

For example, over-the-top VoIP providers are increasing their presence on mobile platforms and exerting competitive pressure on wireless providers.¹⁰⁷ Mobile VoIP technologies

¹⁰⁵ See *Fifteenth Report*, 26 FCC Rcd at 9699 ¶ 34.

¹⁰⁶ See, e.g., Zact, We thought of everything to make your Zact experience unique with specialized plans!, <http://www.zact.com/specialized-plans> (last visited June 17, 2013) (describing “app-specific plans” that allow users to access Facebook, map and navigation data, or specific email apps for a month for up to \$5, without buying a data plan); Thomas J. Fitzgerald, *Keeping Wi-Fi Always Within Range*, N.Y Times (May 15, 2013), <http://www.nytimes.com/2013/05/16/technology/personaltech/keeping-wi-fi-always-within-range.html?pagewanted=all> (Karma’s Wi-Fi hot spot service provides the first GB of data for free and rewards users who share their mobile hot spot with 100 MB of free data if someone else logs in and signs up); see also *id.* (FreedomPop Photon mobile hot spot provides up to 500 MB of free data per month and an additional 2 GB or 4GB of data starting at \$18 per month); Millenicom, Plans, <http://millenicom.com/plans/> (last visited June 17, 2013) (describing no-contract 20 GB and unlimited 3G/4G broadband service plans, as well as 3G/4G Hotspot and BYOD mobile broadband plans, offered at \$69.99 per month).

¹⁰⁷ See Jason Kincaid, *Republic Wireless Officially Unveils \$19/Month Service: Unlimited Everything, No Contracts*, TECHCRUNCH, Nov. 7, 2011, <http://techcrunch.com/2011/11/07/republic-wireless-officially-unveils-19month-service-unlimited-everything-no-contracts/>; Bobsled, <http://bobsled.com> (last visited June 17, 2013); Brent Rose, *It’s Crazy Just How Much Free Calling T-Mobile Is Giving Away With Its Bobsled VoIP App*, GIZMODO, Oct. 11, 2011, <http://gizmodo.com/5848466/t-mobiles-voip-bobsled-just-got-an-olympic-sized-upgrade>.

create an opportunity for over-the-top voice services, allowing users to opt for a broadband-based voice call rather than reliance on mobile voice minutes and/or paying international tolls.¹⁰⁸

Moreover, consumer use of WiFi to access broadband has exploded in recent years. Businesses, customers, and service providers themselves deploy WiFi hotspots, which use unlicensed spectrum, for high-speed wireless Internet connectivity. Indeed, an overwhelming majority of tablets sold – approximately 90% – are not associated with a wireless plan and are “WiFi only.”¹⁰⁹ Usage of WiFi is also surging: in 2012 WiFi connections carried 49% of global Internet traffic,¹¹⁰ and over 1.6 billion WiFi-enabled devices sold in 2012 alone.¹¹¹ This demand for WiFi access is drawing new competitors to the space. For example, in the last two years cable operators have deployed more than 150,000 WiFi access points throughout the country and have invested hundreds of millions of dollars to develop metropolitan WiFi networks that keep their subscribers connected even when they are not at home.¹¹²

In addition, the Commission has, consistent with the National Broadband Plan,¹¹³ sought to repurpose mobile satellite spectrum for flexible terrestrial use. As a result of two transactions the Commission approved last year, DISH Network now holds 40 MHz nationwide spectrum in

¹⁰⁸ See CRAIG MOFFETT *ET AL.*, BERNSTEIN RESEARCH, U.S. WIRELESS: BANDWIDTH ARBITRAGE – HOW BIG A RISK? 5 (Nov. 15, 2011). In one recent survey, 90% of likely buyers are interested in purchasing a smartphone with the capability for WiFi connectivity. See PARKS ASSOCIATES, INDUSTRY REPORT: MOBILE BROADBAND & MOBILE COMPUTING DEVICES Fig. 5 (Feb. 2011).

¹⁰⁹ See Ina Fried, *Mobile Data Use Surging, but Tablets Largely a Wi-Fi-Only Affair*, ALL THINGS DIGITAL, Mar. 20, 2012, <http://allthingsd.com/20120320/mobile-data-use-surging-but-tablets-largely-a-wi-fi-only-affair/>.

¹¹⁰ Cisco, the Zettabyte Era- Trends and Analysis, Page 8 Fig. 6, available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/VNI_Hyperconnectivity_WP.pdf.

¹¹¹ Comments of Comcast Corporation, ET Docket No. 13-49, at 1 (filed May 28, 2013); see also, Comcast Xfinity WiFi Benefits, available at <http://www.comcast.com/wifi/benefits.htm?SCRedirect=true> (last visited June 4, 2013).

¹¹² Comments of the National Cable & Telecommunications Association, ET Docket No. 13-49, at 3-4 (filed May 28, 2013).

¹¹³ See NATIONAL BROADBAND PLAN: CONNECTING AMERICA, at 87-88 (2009), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“NATIONAL BROADBAND PLAN”).

the 2 GHz band.¹¹⁴ The Commission also revised the rules governing the band, now called AWS-4, to allow for flexible-use, terrestrial-only operations that will enable mobile broadband deployment.¹¹⁵ In addition, although faced with challenges related to potential interference with GPS receivers,¹¹⁶ LightSquared is moving forward with alternate plans to deploy and offer wholesale capacity on its proposed LTE-satellite network, and is seeking authority to operate in the 1675-1680 MHz Band.¹¹⁷ Globalstar, too, seeks to repurpose its Big LEO MSS spectrum to allow for terrestrial only operations.¹¹⁸

3. Entry Conditions Are Creating Further Competitive Opportunities

The market's competitiveness is also evidenced by the ability of new providers to enter. As reflected by the diverse array of market participants and new entrants described above, facilities-based providers continue to explore new businesses and expand service via tried and true sources of entry – new spectrum and secondary markets.

New Spectrum. Verizon Wireless strongly favors repurposing spectrum to meet growing consumer demand and enhance competition.¹¹⁹ The Commission has a strong record on both fronts. The AWS and 700 MHz auctions created significant entry opportunities for many

¹¹⁴ See DBSD North America, Inc., and DISH Network Corp., *Order*, 27 FCC Rcd 2250 (IB 2012).

¹¹⁵ See Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, *Report and Order and Order of Proposed Modification*, 27 FCC Rcd 16102 (2012).

¹¹⁶ See International Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver, *Public Notice*, 27 FCC Rcd 1596, 1599 (IB 2012).

¹¹⁷ See Federal Communications Commission Invites Comment on LightSquared Request to Modify Its ATC Authorization, *Public Notice*, 27 FCC Rcd 14290 (2012).

¹¹⁸ See International Bureau, Office of Engineering and Technology, and Wireless Telecommunications Bureau Grant Extension of Comment Deadline on Globalstar, Inc. Petition for Rulemaking, *Public Notice*, 27 FCC Rcd 15787 (2012); Petition for Rulemaking Filed, *Public Notice*, Report No. 2971 (rel. Nov. 30, 2012).

¹¹⁹ See, e.g., Comments of Verizon and Verizon Wireless, WT Docket No. 12-268 (filed Jan. 25, 2013).

potential providers, whether large or small, and whether local, regional or national. The 2006 AWS-1 auction saw more than half of the AWS-1 licenses acquired by small businesses that claimed designated entity status.¹²⁰ In the 2008 700 MHz auction, 55% of the winning bidders claimed designated entity bidding credits as a small business.¹²¹ There also was substantial interest in rural areas among new players – 75 new entities won 428 licenses in 305 rural service areas.¹²² Together, then, these auctions put substantial new spectrum holdings in the hands of new entrants and small providers.

The Commission's removal of restrictions from the BRS/EBS, 2 GHz MSS, and WCS spectrum have also provided opportunities for entry and capacity to address growing spectrum needs. In addition, the Commission is working on creating a 600 MHz wireless band plan from spectrum that will be made available for flexible use through the broadcast television incentive auction,¹²³ and the Spectrum Act has directed the Commission to reallocate and auction off an additional 65 megahertz of spectrum by February 2015, including the PCS H Block (1915-1920/1995-2000 MHz), AWS-3 (2155-2180 MHz), and 15 MHz between 1675-1710 MHz plus an additional 15 MHz to be identified by the Commission.¹²⁴

¹²⁰ See News Release, FCC, Statement of Chairman Kevin J. Martin on the Conclusion of Advanced Wireless Services Auction (Sep. 18, 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-267473A1.pdf.

¹²¹ See News Release, FCC, Statement of Chairman Kevin J. Martin (Mar. 20, 2008), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-280968A1.pdf

¹²² *Id.*

¹²³ See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Notice of Proposed Rulemaking*, 27 FCC Rcd 12357 (2012).

¹²⁴ Middle Class Tax Relief and Job Creation Act, § 6401(b), Pub. L. No. 112-96, 126 Stat. 156 (Feb. 22, 2012). (“Spectrum Act”).

Secondary Markets. The market's competitiveness is also evidenced by a robust secondary market that allows spectrum to change hands and flow to its best and most efficient use as demand and supply conditions change.¹²⁵ In fact, the Commission has taken several steps to facilitate wireless service providers' access to spectrum in the secondary market, including permitting partitioning and disaggregation of spectrum licenses and spectrum leasing.¹²⁶ These policies have succeeded in making spectrum to a wide variety of carriers and not just to the largest carriers, as shown below.

For example, according to data compiled from the Commission's Universal Licensing System ("ULS"), the number of approved transfer/assignment applications jumped from an average of roughly 620 per year for the years 1997-1999 to an average of approximately 2,377 for the years 2000-2012.¹²⁷ Similarly, since the FCC adopted spectrum leasing rules,¹²⁸ the number of spectrum lease applications/notifications filed has grown from 120 in 2004¹²⁹ to an

¹²⁵ See JOHN W. MAYO & SCOTT WALLSTEN, ENABLING EFFICIENT WIRELESS COMMUNICATIONS: THE ROLE OF SECONDARY SPECTRUM MARKETS 2 (June 2009), https://www.techpolicyinstitute.org/files/wallsten_mayo_0609.pdf ("MAYO-WALLSTEN"); see also NATIONAL BROADBAND PLAN at 83 (recognizing that secondary markets may provide "the most expedient path to repurposing spectrum to broadband").

¹²⁶ Fostering Innovation and Investment in the Wireless Communications Market; A National Broadband Plan for Our Future, *Notice of Inquiry*, 24 FCC Rcd 11322, 11331 n.27 (2009); see also Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking*, 19 FCC Rcd 17503, 17505 ¶ 1 (2004).

¹²⁷ See MAYO-WALLSTEN at 21, Table 3 (for years 1997-2008). For years 2009-2010, see ULS Advanced Application Search, <http://wireless2.fcc.gov/UlsApp/ApplicationSearch/searchAdvanced.jsp> (last visited June 4, 2013). These figures are for approved applications, and thus do not reflect the total number of separate licenses or service areas in which spectrum was transferred. The primary radio services reflected in this calculation are Cellular, PCS, Paging, BRS, EBS, Microwave, Public Safety, Land Mobile, Industrial/Business, and Public Coast.

¹²⁸ See Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Report and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd 20604 (2003).

¹²⁹ MAYO-WALLSTEN at 22, Table 4.

average of 560 over the past six calendar years (2007-2012).¹³⁰ Indeed, as of June 4, 2013, there were 3,172 active spectrum leases listed in ULS.¹³¹ Of those, 3,075 were “long term,” 2,192 of which involve arrangements where the lessee has *de facto* control over use of the spectrum.¹³²

Further, there is no merit to the claim that small carriers cannot obtain spectrum through market-based mechanisms. Verizon Wireless, for example, is using the secondary market to lease parts of its 700 MHz spectrum to rural carriers to build and operate their own 4G networks as part of its LTE in Rural America Program.¹³³ Verizon Wireless has signed twenty leases under the program to date, including rural carriers in Idaho, Indiana, Kentucky, Oklahoma, Michigan, Missouri, North Carolina, Wisconsin, and Utah.¹³⁴ The first rural carriers in the program launched their 4G LTE networks in 2012, and eleven leases are now active. And earlier this year, Verizon Wireless partnered with Alaska-based KPU Telecommunications to bring LTE

¹³⁰ See ULS Advanced Application Search, <http://wireless2.fcc.gov/UlsApp/ApplicationSearch/searchAdvanced.jsp> (last visited June 4, 2013). Verizon Wireless limited its search to new lease applications/notifications (Application Purpose “LN”), excluding amendment applications, filed in each of the last six years. See also MAYO-WALLSTEN at 23, Table 5.

¹³¹ See ULS Lease Search, <http://wireless2.fcc.gov/UlsApp/UlsSearch/results.jsp> (last visited June 4, 2013).

¹³² *Id.*

¹³³ See Jesse Ward, *Pioneer Cellular Joins Verizon’s Rural LTE Program*, NEW EDGE, Dec. 20, 2011, available at <http://www.ntca.org/new-edge/wireless/pioneer-cellular-joins-verizon-wireless-lte-in-rural-america-program>; see also Verizon Wireless, *LTE in Rural America*, <http://aboutus.verizonwireless.com/technology/network/> (last visited June 17, 2013).

¹³⁴ See Joan Engbretson, *Verizon Now Has 12 Rural 4G LTE Partners, Appalachian Wireless Latest to Join*, TELECOMPETITOR, Oct. 6, 2011, available at <http://www.telecompetitor.com/verizon-now-has-12-rural-4g-lte-partners-appalachian-wireless-latest-to-join/>; Bernie Arnason, *Verizon Adds Chariton Valley to Verizon Rural 4G Program*, TELECOMPETITOR, Sep. 9, 2011, available at <http://www.telecompetitor.com/verizon-adds-chariton-valley-to-verizon-rural-4g-program/>; Bernie Arnason, *Verizon Adds Another Partner to Rural 4G LTE Program*, TELECOMPETITOR, Apr. 20, 2011, available at <http://www.telecompetitor.com/verizon-adds-another-partner-to-rural-4g-lte-program/>; Lynette Luna, *Verizon Wireless Makes Rural LTE Deal with Carolina West*, FIERCE BROADBAND WIRELESS, Apr. 17, 2011, available at <http://www.fiercebroadbandwireless.com/story/verizon-wireless-makes-rural-lte-deal-carolina-west/2011-04-17>.

service to “the last frontier.”¹³⁵ The Rural America Program’s signed leases cumulatively cover over 2.8 million people in 14 states.¹³⁶

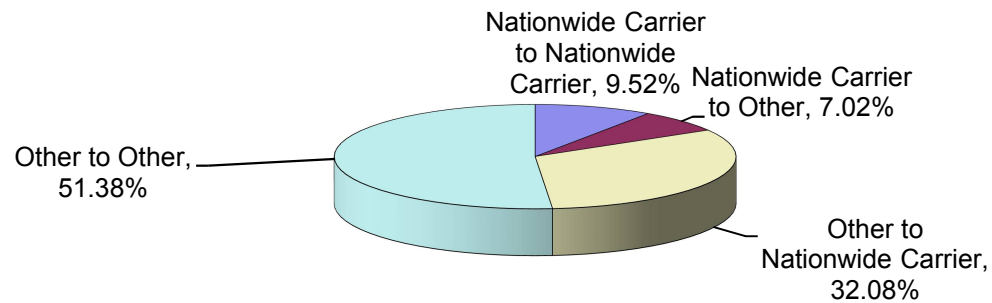
More broadly, non-nationwide carriers acquire spectrum in the majority of license assignments and transfers before the Commission. Verizon Wireless analyzed assignments and transfers of market-area and cellular authorizations from January 2012 through April 2013.¹³⁷ Verizon Wireless identified, for each transaction, whether the assignee/transferee or assignor/transferor was affiliated with Verizon Wireless, AT&T, Sprint Nextel, or T-Mobile (“Nationwide Carriers”) or not. Based upon those classifications, the data show that the overwhelming majority of such transactions take place between non-Nationwide Carriers:

¹³⁵ See Dan Meyer, *Verizon Wireless Expands LTE in Rural America Program to Alaska*, RCRWIRELESS (April 23, 2013), available at <http://www.rcrwireless.com/article/20130423/carriers/verizon-wireless-expands-lte-rural-america-program-alaska/>.

¹³⁶ See Verizon, *4G LTE Goes Live in Two Rural Markets*, available at <http://responsibility.verizon.com/news/lte-in-rural-america-goes-live-in-two-rural-markets> (last visited June 4, 2013).

¹³⁷ Verizon Wireless obtained data from the FCC’s Assignments & Transfers data table dated May 26, 2013. Verizon Wireless limited the dataset to those applications with a consummated status, where the consummation occurred between January 1, 2012 and April 30, 2012. Verizon Wireless also eliminated those applications that did not involve at least one market-based license or cellular license, defined as those authorizations that are currently “active” in either the L_Market or L_Cell database files.

Market Area/Cellular License Assignments, 2012 - April 2013



The robust state of the secondary market for the purchase and lease of spectrum, and the ways in which that market serves small and large carriers alike, is illustrated by the emergence of marketplace actors such as Spectrum Bridge Inc., which serves as a clearinghouse for secondary market transactions. Specifically, Spectrum Bridge's SpecEx data platform creates an online marketplace for spectrum, allowing buyers and sellers to search and find available spectrum in the secondary market.¹³⁸ As of June 4, 2013, SpecEx listed licenses in spectrum bands including 800 MHz, AMTS, AWS, LMDS and EBS as available for purchase or lease across an assortment of states.¹³⁹

4. The U.S. Market Compares Favorably Internationally

A comparison of the U.S. market to other countries demonstrates that the U.S. wireless industry is highly competitive by any measure. Critically important for the future, U.S. wireless providers continue to be the world leaders with respect to capital investment in networks and

¹³⁸ See Spectrum Bridge, Products & Services, <http://spectrumbridge.com/ProductsServices/ProductsServices.aspx>, (last visited June 4, 2013)

¹³⁹ See Spectrum Bridge, SpecEx, <http://spectrumbridge.com/specex/search.aspx> (last visited June 4, 2013).

services. In 2012, U.S. providers invested more than \$30 billion in their networks, or approximately \$94 per subscriber – whereas non-U.S. providers invested an average of \$16 per subscriber.¹⁴⁰ In fact, the level of wireless capital expenditures in the U.S. grew more than 70% between 2007 and 2013, while declining in the EU due to a historically more intrusive regulatory environment.¹⁴¹

As a result of this investment, the United States accounts for 47% of the global LTE connections¹⁴² despite having just 5% of the world's mobile subscribers.¹⁴³ This number is nearly double the share of second ranking South Korea and more than triple the share of third ranking Japan.¹⁴⁴

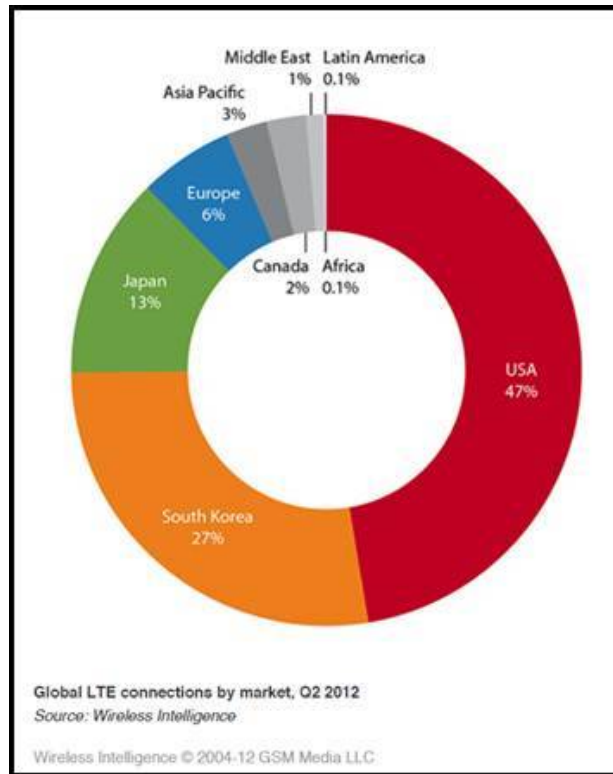
¹⁴⁰ See *50 Wireless Quick Facts*; see also EUROPEAN TELECOMS MATRIX Q1 2012.

¹⁴¹ See GSMA MOBILE WIRELESS PERFORMANCE.

¹⁴² Wireless Intelligence, *US, South Korea and Japan Account for 87% of Global LTE Connections*, *supra* at fn. 13.

¹⁴³ CTIA May 2013 Press Release.

¹⁴⁴ See Wireless Intelligence, *US, South Korea and Japan Account for 87% of Global LTE Connections*, *supra* at fn. 13.

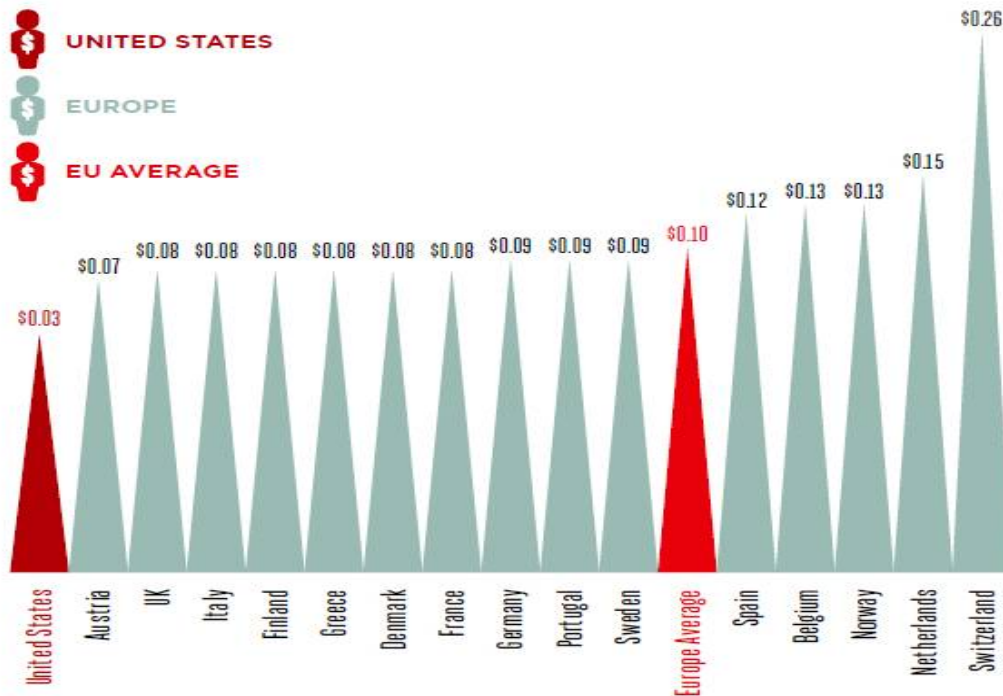


U.S. mobile wireless subscribers have benefitted from this competition and investment in tangible ways. First, U.S. consumers “pay less per unit of usage” – and thus receive better value – because they use mobile services more extensively (*i.e.*, five times more voice minutes and two times more data per connection than the EU average).¹⁴⁵ Indeed, the average revenue per minute of voice usage for wireless carriers in the U.S. in 2012 was three cents, “far lower than in any European country, and less than a third of the European average.”¹⁴⁶

¹⁴⁵ See GSMA MOBILE WIRELESS PERFORMANCE at 126-8.

¹⁴⁶ *Id.* at 8, fig. 4.

VOICE REVENUE PER MINUTE 2012



Source: GSMA (utilizing Merrill Lynch data)¹⁴⁷

Second, U.S. consumers experience faster connection speeds as a result of greater U.S. investment in networks and services. In 2012, the average mobile data connection speed for North America was 2.6 Mbps, the fastest in the world, nearly twice that available in Western Europe, and over five times the global average.¹⁴⁸ Third, U.S. consumers are enjoying the benefits of LTE deployment at faster pace; by year-end 2013, 19% of U.S. connections will be on LTE networks compared to less than 2% in the EU.¹⁴⁹

¹⁴⁷ *Id.*

¹⁴⁸ See OFFICE OF SCIENCE AND TECHNOLOGY POLICY & THE NATIONAL ECONOMIC COUNCIL, FOUR YEARS OF BROADBAND GROWTH 6 (June 2013), http://www.whitehouse.gov/sites/default/files/broadband_report_final.pdf.

¹⁴⁹ *Id.* at 2.

In sum, international comparative data confirm that the U.S. marketplace is the most competitive and vibrant in the world – to the significant benefit of consumers here.

C. The Competitive Marketplace Has Led to Rising Consumer Satisfaction

As carriers fight to win and retain customers in a vigorously competitive mobile ecosystem, overall wireless consumer satisfaction levels have reached new heights. With the low barriers to customer switching described below, providers must compete vigorously to retain customers’ ongoing business. Moreover, regular surveys of wireless consumer opinion and the low level of customer complaints to the FCC show that wireless competitors are succeeding in their efforts to meet customers’ needs and expectations.

1. Surveys Consistently Report High Numbers of Satisfied Customers

The American Customer Satisfaction Index (“ACSI”) and Consumer Reports have each reported that the wireless industry has increasingly high consumer satisfaction. ACSI recently found that wireless consumer satisfaction remains strong and has increased substantially since 2004.¹⁵⁰ Consumer Reports’ January 2013 edition observed that seven out of seven conventional wireless contract providers scored between 62 (“fairly well satisfied”) and 88 (“very satisfied”) – an improvement over the previous year.¹⁵¹ A McLaughlin & Associates and Penn Schoen

¹⁵⁰ ACSI Benchmarks by Industry, Wireless Telephone Service, *available at* http://www.theacsi.org/index.php?option=com_content&view=article&id=147&catid=&Itemid=212&i=Wireless+Telephone+Service (last visited June 14, 2013) (reflecting overall satisfaction with wireless telephone service up from a score of 65 in 2004 to 72 in 2013, and increasing steadily every year from 2008 to 2013).

¹⁵¹ *See Best Phones & Plans*, CONSUMER REPORTS, Jan. 2013, at 34 (finding customers with and without contracts from a wide variety of carriers are “fairly well satisfied” to “very satisfied.”).

Berland 2013 survey reflects that 91% of wireless phone customers remain highly satisfied with their wireless phone service; the majority (52%) is “very” satisfied.¹⁵²

2. The Level of Consumer Complaints Is Minimal

Based on a review of the Commission’s quarterly reports on informal complaints,¹⁵³ wireless complaints are extremely low in relation to the total number of wireless subscribers. For example, in 2012, fewer than 145,000 complaints were filed with the Commission from the over 326 million wireless subscribers, a complaint rate of 450 *per million customers* or 0.04%.¹⁵⁴ While the number of complaints rose slightly in 2012 in comparison to previous years, the Commission acknowledged that “the bulk” of these complaints were Telecommunications Consumer Protection Act (“TCPA”) complaints relating to telemarketers or spam, not complaints about actions of the carriers themselves.¹⁵⁵

3. Consumer Satisfaction Is Underscored by Low Barriers to Switching

Notwithstanding surveys showing strong and improving customer satisfaction, subscribers who wish to switch providers can do so easily in today’s market. First, the wireless industry offers consumers many choices for services and plans, including prepaid service

¹⁵² McLaughlin & Associates and Penn Schoen Berland, 2013 National Consumer Survey, <http://www.mywireless.org/media-center/data-center/2013-national-survey/> (last visited June 11, 2013).

¹⁵³ See generally FCC, Quarterly Reports – Customer Inquiries and Complaints, <http://www.fcc.gov/encyclopedia/quarterly-reports-consumer-inquiries-and-complaints> (last visited June 14, 2013) (providing FCC Quarterly Reports of Consumer Inquiries and Complaints for 2002 through fourth quarter 2010). (“FCC Quarterly Reports – Customer Inquiries and Complaints”).

¹⁵⁴ See *id.* (reporting the number of complaints related to wireless telecommunications for each quarter of 2012 for a total of 146,961). The number of subscribers at the end of 2012 was estimated based on survey results from CTIA’s Semi-Annual Wireless Industry Survey. See CTIA SEMI-ANNUAL WIRELESS INDUSTRY SURVEY at 2 & 4 (estimating the number of wireless connections to be about 326.475 million as of year-end 2012).

¹⁵⁵ See *FCC Quarterly Reports – Customer Inquiries and Complaints*. The FCC’s quarterly reports no longer provide a detailed breakdown of the number of complaints filed with respect to wireless services that pertain specifically to TCPA-related issues, as they had done prior to 2012. However, three of the four quarterly reports state that TCPA-related complaints comprised “the bulk” of those complaints.

options, month-to-month postpaid contracts, and postpaid contracts both with and without an Early Termination Fee (“ETF”). Even for contracts with ETFs, the contracts typically provide that the ETF is prorated over the term of the contract and give customers the ability to obtain wireless devices at substantial discounts from their full retail price. By reducing up-front costs to consumers, this pricing structure enables more customers to access a range of state-of-the-art broadband services and capabilities. Moreover, if a customer desires a new phone when switching providers, there are many low cost options and the new carrier often subsidizes the cost of the phone for a new customer. There are also multiple alternatives for customers who wish to avoid ETFs, including prepaid plans. In fact, the growth of prepaid subscribers as a percentage of the wireless marketplace¹⁵⁶ has further served to reduce the barriers to switching carriers.

Second, carriers themselves offer incentive programs to reduce the costs associated with switching. Verizon Wireless, for example, has a trade-in program that allows subscribers of other carriers to trade in their phones to switch to Verizon Wireless, in exchange for which the subscriber receives value that can reduce, or even fully offset, the ETF assessed by the other carrier.¹⁵⁷

Third, the local number portability regime demonstrably supports customers’ ability to easily migrate from one carrier to another. The wireless-to-wireless porting process is very user-friendly, as the wireless industry has implemented streamlined procedures to complete the vast

¹⁵⁶ UBS INVESTMENT RESEARCH, WIRELESS 411 REPORT: VERSION 48, *Top 10 U.S. Wireless Trends in 1Q13*, at 11, Table 2 (MAY 20, 2013) (reflecting that 22% of all wireless subscribers were prepaid subscribers, as of fourth quarter 2012); *see also* MORGAN STANLEY PREPAID ALPHAWISE SURVEY at 1 (estimating that prepaid “should take 29% subscriber share by 2018”).

¹⁵⁷ Verizon Wireless, Device Trade In Program, <https://www.trade-in.vzw.com/home.php5> (last visited June 4, 2013).

majority of ports within a matter of hours. Wireless-to-wireless number porting is not a barrier to switching carriers, as utilization has increased each year since it was first introduced in late 2003.¹⁵⁸ According to the most recent data available, wireless customers have ported almost 87 million telephone numbers to new wireless carriers.¹⁵⁹

In short, barriers to switching are low, forcing mobile carriers to constantly earn their customers' business.

III. CONSUMERS BENEFIT FROM COMPETITION IN DEVICES AND APPLICATIONS

In today's world of mix-and-match competition, consumers choose how to build their own mobile broadband experience. The wireless device market is an increasingly important element of that choice. Growth and diversity in mobile applications marketplace also fuels consumer choice, benefitting consumers and the economy and further underscoring the robust competition that exists.

A. The Wireless Device Market Is an Increasingly Important Component of Consumer Choice

Today's wireless devices are an unprecedented source of personalization and enable users to access and create innovative content and applications. In fact, consumers increasingly focus on the device when making wireless service purchasing decisions. According to a report released in April 2013, 32% of shoppers select a phone first, then a mobile carrier, including

¹⁵⁸ See 47 C.F.R. § 52.31 (2009) (setting forth the rules governing wireless number portability).

¹⁵⁹ See CRAIG STROUP & JOHN VU, FCC, Numbering Resource Utilization in the United States at 1 (April 2013), http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0405/DOC-319997A1.pdf (porting data as of Sept. 30, 2010).

48% of consumers that switch carriers.¹⁶⁰ With the diverse array of powerful computing devices, consumers and businesses have almost limitless versatility. This fuels more and more usage, demanding increasingly robust broadband networks and triggering greater network investment and vigorous competition among mobile providers and the entire ecosystem.

1. The Diverse Device Market Is Both the Product of and a Driver of More Competition

The diverse and expanding device market – including smartphones, tablets, USB modems, mobile hotspots, and other connected devices – is helping to drive competition across the mobile wireless ecosystem. Indeed, as of year-end 2012, there were 326.5 million wireless devices in the U.S., a penetration rate of 102%.¹⁶¹

Smartphones. Smartphones, or devices that offer advanced computing capabilities and connectivity, continue their phenomenal growth in the competitive worldwide device market. By 2Q 2012, over half of mobile subscribers owned smartphones.¹⁶² With this growing U.S. consumer demand for smartphones, manufacturers are bringing innovative devices to market at incredible speeds. Over 630 different handsets and devices are manufactured for the U.S. market.¹⁶³ These devices are not run-of-the-mill copycats; most are highly innovative and differentiated.

¹⁶⁰ GOOGLE AND COMPETE, WIRELESS SHOPPER STUDY at 8 (Apr. 2013), http://ssl.gstatic.com/think/docs/how-do-people-shop-for-mobile-phones-research_research-studies.pdf.

¹⁶¹ CTIA 2013 WIRELESS INDUSTRY INDICES at 22.

¹⁶² Nielsen, America's New Mobile Majority: A Look at Smartphone Owners in the U.S. (May 7, 2012), available at <http://www.nielsen.com/us/en/newswire/2012/who-owns-smartphones-in-the-us.html>. (last visited June 15, 2013).

¹⁶³ CTIA, *The U.S. Wireless Industry Overview*, at 18 (Apr. 25, 2012) ("CTIA U.S. Wireless Industry Overview"), available at http://files.ctia.org/pdf/042412_-_Wireless_Industry_Overview.pdf (last visited June 15, 2013).

Customer sales have mirrored the intense production of new smartphone devices. In Q4 2012, smartphones accounted for almost 84% of devices sold.¹⁶⁴ Approximately 125 million people in the U.S. owned smartphones at the end of 2012, up 30% from 2011.¹⁶⁵ As the popularity of smartphones increases, however, the price consumers pay for smartphones continues to decline. ABI Research predicts that low-cost smartphones will account for 46 percent of smartphone shipments by 2018, up from 28 percent in 2012.¹⁶⁶ Another research firm predicts an even more dramatic trend, with over 50 percent of smartphones costing \$150 or less in 2017.¹⁶⁷

Tablets. The tablet market continues to grow rapidly, and the tablet has earned the title of the “fastest-growing product category in the history of the [consumer electronics] industry....”¹⁶⁸ By the end of 2012, more than 50 million U.S. consumers owned tablets,¹⁶⁹ more than double that of the previous year.¹⁷⁰ Today, CNET counts 100 major released, or soon-to-be-

¹⁶⁴ Chetan Sharma Consulting, *US Wireless Market Update: Q4 2012 and full year 2012*, at 7 (Mar. 2013), available at <http://www.slideshare.net/fullscreen/chetansharma/us-wireless-marketq42012updatemarch2013chetansharmaconsulting-17151380/> (last visited June 15, 2013).

¹⁶⁵ COMSCORE, MOBILE FUTURE IN FOCUS 2013 11 (Feb. 2013).

¹⁶⁶ Press Release, ABI Research, Low-cost Smartphones to Account for 46% of Smartphone Shipments by 2018—up from 28% in 2012 (Apr. 22, 2013), available at <http://www.abiresearch.com/press/low-cost-smartphones-to-account-for-46-of-smartpho.> (last visited June 15, 2013).

¹⁶⁷ Press Release, Informa, One in Every Two Smartphones Sold in 2017 will Be Priced Below US\$150 (Dec. 11, 2012), available at <http://blogs.informatandm.com/6575/press-release-one-in-every-two-smartphones-sold-in-2017-will-be-priced-below-us150/>.

¹⁶⁸ Press Release, CEA, CE Industry Yearly Revenues Expected to Surpass \$200B for First Time (July 24, 2012), available at [http://www.ce.org/News/News-Releases/Press-Releases/2012-Press-Releases/CE-Industry-Yearly-Revenues-Expected-to-Surpass-\\$2.aspx](http://www.ce.org/News/News-Releases/Press-Releases/2012-Press-Releases/CE-Industry-Yearly-Revenues-Expected-to-Surpass-$2.aspx). (last visited June 15, 2013).

¹⁶⁹ Press Release, comScore, comScore Releases the “2013 Mobile Future in Focus” Report (Feb. 25, 2013), available at http://www.comscore.com/Insights/Press_Releases/2013/2/comScore_Releases_the_2013_Mobile_Future_in_Focus_Report. (last visited June 15, 2013).

¹⁷⁰ See David Needle, *Tablet Adoption in U.S. Has More Than Doubled in year Past Year*, TABTIMES (Dec. 21, 2012), available at <http://tabtimes.com/news/itech-stats-research/2012/12/21/tablet-adoption-us-has-more-doubled-past-year.> (last visited June 15, 2013).

released, tablets available to U.S. consumers.¹⁷¹ And as noted above, approximately 90% of tablets are “WiFi only.”¹⁷² In many cases, it is the device itself that drives the purchase. Price competition in the 7-to-8-inch tablet sub-market in particular has been remarkable. For example, relatively inexpensive tablets – hundreds of dollars cheaper than Apple’s iPad – are sold by retail companies who see the tablets primarily as a means to sell content (movies, music, ebooks, and the like) to consumers.¹⁷³ This unique business model competes with the traditional service provider model and brings additional options to consumers.

Machine-to-Machine Devices. Another area of innovation in wireless networks and devices lies in machine-to-machine (“M2M”) communications such as telemetry, smart grid, and industrial monitors that are connecting everyone and everything. By some estimates, there will be as many as 25 billion network-enabled machines connected to the Internet devices worldwide by 2015 and as many as 50 billion by 2020.¹⁷⁴ Currently over 7 million M2M devices are

¹⁷¹ See Eric Franklin & Xiomara Blanco, *CNET looks at current and upcoming tablets*, CNET (June 13, 2013) (“*CNET looks at current and upcoming tablets*”), available at http://news.cnet.com/8301-17938_105-20037960-1/cnet-looks-at-current-and-upcoming-tablets/, (last visited June 15, 2013). According to CNET, major tablet manufacturers include Acer, Amazon, Apple, Archos, Asus, Barnes & Noble, Dell, Google, HP, Kobo, Lenovo, Microsoft, Pantech, Polaroid, Samsung, Sony, Toshiba, Velocity, and Vizio. See *id.*

¹⁷² See Ina Fried, *Mobile Data Use Surging, but Tablets Largely a Wi-Fi-Only Affair*, ALL THINGS DIGITAL, Mar. 20, 2012, available at <http://allthingsd.com/20120320/mobile-data-use-surging-but-tablets-largely-a-wi-fi-only-affair/>, (last visited June 15, 2013).

¹⁷³ See Peter Svensson, *Kindle Fire Review: New Tablet Sacrifices To Get Under \$200*, THE HUFFINGTON POST, Nov. 15, 2011, http://www.huffingtonpost.com/2011/11/16/kindle-fire-review_n_1097144.html; Clare Jim, *Google to secondSell Second-gen Nexus 7 Tablet from July: sources*Sources, REUTERS, Apr. 3, 2013, <http://www.reuters.com/article/2013/04/03/us-google-nexus-idUSBRE93205L20130403>.

¹⁷⁴ CISCO, THE INTERNET OF THINGS: HOW THE NEXT EVOLUTION OF THE INTERNET IS CHANGING EVERYTHING at 3 (April 2011), http://www.cisco.com/web/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf.

connected to Verizon Wireless' network,¹⁷⁵ and carriers are investing heavily and competing to capture a portion of this market.¹⁷⁶

Verizon Wireless and other network operators also have opened their networks to M2M devices with embedded wireless functionality and offer business, technical, and institutional assistance to companies developing M2M solutions.¹⁷⁷ For example, Verizon Wireless operates Innovation Centers to assist participants to design and develop LTE-enabled products. The Centers help developers assess what types of new products and services may best succeed in the marketplace. Verizon Wireless also has introduced an online portal where device developers can obtain support services and directly communicate with Verizon Wireless engineers.¹⁷⁸

Hot Spots and Other Connected Devices. Consumers also benefit from “mix and match” competition through the numerous options that exist to connect devices not served by a wireless plan, such as some computers or tablets, to the Internet. These options can serve as either a substitute for or a complement to a wireless plan. For example, USB modems and mobile hotspots are two types of mobile devices that enable this connectivity. Analysts predict that 14.6 million mobile hotspot devices like the Jetpack® will ship this year and 20.9 million will ship in

¹⁷⁵ See Verizon Wireless, About Open Development, <http://opennetwork.verizonwireless.com/aboutOpenDev.aspx#working> (“Verizon Wireless Open Development”) (last visited June 4, 2013).

¹⁷⁶ See, e.g., Roberta Prescott, *Verizon CIO carrier's Outlines Ccarrier's Eight Investment Targets*, RCRWIRELESS, Dec. 5, 2012, <http://www.rcrwireless.com/article/20121205/carriers/verizons-8-investment-targets-cios-agenda/>.

¹⁷⁷ See Maisie Ramsay, *AT&T, Verizon Bet on Embedded Devices*, WIRELESS WEEK, June 14, 2010, <http://www.wirelessweek.com/Articles/2010/06/Carriers-Embedded-Devices-ATT-Verizon>.

¹⁷⁸ See Verizon Wireless Open Development; see also Jack Wallen, *Five Ways Verizon is Helping to Drive M2M towards the futureFuture*, TECHREPUBLIC, Jan. 14, 2013, <http://www.techrepublic.com/blog/smartphones/five-ways-verizon-is-helping-to-drive-m2m-towards-the-future/6179>.

2014.¹⁷⁹ Further, under many carriers' shared data plans, consumers have the option to use their smartphone as a mobile hotspot.¹⁸⁰ This option allows consumers to expand wireless connectivity to devices on the go through a device they already own.

Mobile broadband-connected e-readers, portable media players, and consumer navigation devices are also widely available to consumers, and companies are innovating to deliver to consumers new mobile broadband-connected devices. Verizon Wireless, for example, offers a mobile broadband-connected digital camera and a vehicle diagnostics tool.¹⁸¹ In addition, new, connected "smart watches" are coming to the market, and analysts predict that over 1.2 million such watches will be shipped this year.¹⁸²

2. The U.S. Market Is Where the World's Manufacturers Come to Launch Nearly All Products

The growing number of manufacturers competing to launch new innovative devices is also fueling competition in the mobile wireless ecosystem. The U.S. "continues to sell over 40% of the world's smartphone[s] every quarter, making it 'the most attractive market'" for original equipment manufacturers ("OEMs").¹⁸³ In this competitive marketplace, manufacturers face few if any impediments to entering the market or growing market share by offering competing devices that generate consumer demand.

¹⁷⁹ Mike Freeman, *Can MiFi Maker Chart a turnaroundTurnaround?*, UT SAN DIEGO, May 3, 2013, <http://www.utsandiego.com/news/2013/May/03/Novatel-Wireless-lags-despite-popular-MiFi/>.

¹⁸⁰ See, e.g., Verizon Wireless, Share Everything® Plan FAQs, http://support.verizonwireless.com/faqs/Calling%20Plans/share_everything.html (last visited June 9, 2013).

¹⁸¹ See Verizon Wireless

¹⁸² Press Release, ABI Research, *More Than One Million Smart Watches Will Be Shipped in 2013* (Apr. 16, 2013), <http://www.abiresearch.com/press/more-than-one-million-smart-watches-will-be-shippe>.

¹⁸³ Chetan Sharma Consulting, *US Wireless Market Update: Q2 2012*, at 6 (Aug. 2012), <http://www.chetanisharma.com/USmarketupdateQ22012.htm>.

Market trends illustrate the vigorous competition in this segment. In the core handset market, there are more than thirty different manufacturers,¹⁸⁴ including Apple, BlackBerry, HTC, Huawei, Kyocera, LG, Motorola, Nokia, Samsung, Sanyo, Sony, and ZTE. In the past year alone, significant shifts in market share have occurred among manufacturers. Specifically, Apple, which began 2012 as the number four OEM, reached number two in October 2012, and HTC replaced RIM as the number five OEM.¹⁸⁵ According to one analyst, Apple surpassed Samsung as the top mobile-phone maker in the U.S. in 1Q 2013.¹⁸⁶ No single manufacturer or service provider has sufficient market power to control the wholesale or retail distribution chain or prevent another manufacturer from working with particular service providers.

Moreover, there is also very little vertical integration in today's wireless ecosystem. Device manufacturers are completely independent from service providers, and they typically distribute their equipment broadly to multiple wireless service providers and vendors. Verizon Wireless, for example, offers consumers nearly 90 device choices. Devices are sold not only by mobile service providers but also by device manufacturers such as Apple or Samsung, content

¹⁸⁴ CTIA U.S. Wireless Industry Overview at 18 (Apr. 25, 2012).

¹⁸⁵ See Press Release, comScore, Inc., *comScore Reports December 2011 U.S. Mobile Subscriber Market Share* (Feb. 2, 2012), http://www.comscore.com/Insights/Press_Releases/2012/2/comScore_Reports_December_2011_U.S._Mobile_Subscriber_Market_Share; Press Release, comScore, Inc., *comScore Reports October 2012 U.S. Mobile Subscriber Market Share* (Nov. 30, 2012), http://www.comscore.com/Insights/Press_Releases/2012/11/comScore_Reports_October_2012_U.S._Mobile_Subscriber_Market_Share; Press Release, comScore, Inc., *comScore Reports November 2012 U.S. Mobile Subscriber Market Share* (Jan. 3, 2013), http://www.comscore.com/Insights/Press_Releases/2013/1/comScore_Reports_November_2012_U.S._Mobile_Subscriber_Market_Share; Press Release, comScore, Inc., *comScore Reports December 2012 U.S. Smartphone Subscriber Market Share* (Feb. 6, 2013), http://www.comscore.com/Insights/Press_Releases/2013/2/comScore_Reports_December_2012_U.S._Smartphone_Subscriber_Market_Share.

¹⁸⁶ Adam Ewing, *Apple Overtakes Samsung With 34% of U.S. Mobile Market*, BLOOMBERG, Feb. 1, 2013, <http://www.bloomberg.com/news/2013-02-01/apple-overtakes-samsung-by-taking-34-u-s-mobile-phone-market.html>.

providers such as Amazon or Barnes & Noble, big-box stores such as Best Buy, RadioShack or Wal-Mart, or even a search engine provider such as Google.

The large number of existing market participants and constant entry by new participants are evidence that the marketplace is sufficiently fluid and competitive to allow new entrants to effectively compete with the many existing manufacturers. To take just one example, there currently are tablets available to U.S. consumers from 19 different manufacturers.¹⁸⁷

B. The Dynamic Mobile Apps Marketplace Continues its Rapid Growth, Benefiting Consumers and Improving the Economy

In just a few short years, mobile applications (“apps”) have transformed the wireless consumer experience. The market for mobile apps features powerful competitive forces, and consumers have more choices than ever before. As the apps market grows, mobile device usage increases – a trend marked by constant innovation, driving explosive rates of consumer adoption and fueling the U.S. economy. Indeed, the app economy has created 519,000 U.S. jobs since 2007,¹⁸⁸ and Facebook apps alone are estimated to have created between 183,000 and 236,000 jobs with an employment value of between \$12 billion and \$16 billion.¹⁸⁹ This economic growth will continue to trend higher: mobile apps will become a \$46 billion marketplace by 2016.¹⁹⁰

Wireless consumers have access to rapidly growing numbers of apps, developers, and distribution channels. In 2012, global mobile app downloads more than doubled over the prior

¹⁸⁷ See CNET looks at current and upcoming tablets.

¹⁸⁸ See Dr. Michael Mandel and Judith Scherer, THE GEOGRAPHY OF THE APP ECONOMY 5 (Sept. 2012), http://files.ctia.org/pdf/The_Geography_of_the_App_Economy.pdf

¹⁸⁹ See United Nations Conference on Trade and Development, INFORMATION ECONOMY REPORT 2012 32, unctad.org/en/PublicationsLibrary/ier2012_en.pdf.

¹⁹⁰ See Mobile Future, All About Apps Infographic (March 5, 2013), <http://mobilefuture.org/resources/app-infographic/> (“All About Apps Infographic”).

year, reaching 60.1 billion.¹⁹¹ Last year, app store revenues collectively reached nearly \$6 billion,¹⁹² and analysts estimate there will be 108 billion app downloads worldwide by 2017, generating over \$35 billion in revenue.¹⁹³ Since 2008, the Apple App Store *alone* has generated \$7 billion in gross revenue.¹⁹⁴ An April 2013 report revealed that four app stores – Google Play, Apple’s App Store, BlackBerry World, and the Windows Phone Store – hit 13.4 billion downloads in Q1 2013 alone, with revenues of \$2.2 billion.¹⁹⁵ And during a single *day* in the 2012 holiday season, consumers downloaded a record-breaking 328 million iOS and Android apps.¹⁹⁶

Size and Scope of App Store Offerings. The app stores of Apple and Android opened in 2008. Since then, app stores – and their offerings – have undergone tremendous growth: As of September 2012, there are over 28 independent non-carrier app stores, offering over 2.7 million apps for eleven different operating systems (OS).¹⁹⁷ Wireless OS providers operate some stores,

¹⁹¹ See Nathan Eddy, *Mobile App Downloads to Hit 108 Billion in 2017*, EWEEK (Feb. 21, 2013), <http://www.eweek.com/mobile/mobile-app-downloads-to-hit-108-billion-in-2017/>.

¹⁹² See The Future of Mobile at 76.

¹⁹³ See Nathan Eddy, *Mobile App Downloads to hit 108 Billion in 2017*, EWEEK (Feb. 21, 2013), <http://www.eweek.com/mobile/mobile-app-downloads-to-hit-108-billion-in-2017/>; Jason Ankeny, *Forecast: Mobile App Revenues to Top \$35B in 2017, Fueled by Ad Spending*, FIERCEMOBILECONTENT (Nov. 7, 2012), <http://www.fiercemobilecontent.com/story/forecast-mobile-app-revenues-top-35b-2017-fueled-ad-spending/2012-11-07>.

¹⁹⁴ See Allyson Kazmucha, *App Store Brought in 3.5 Times More Revenue than Google Play in 2012*, iMORE (Jan. 30, 2013), <http://www.imore.com/app-store-brought-35-times-more-revenue-google-play-2012>.

¹⁹⁵ Press Release, Canalys, *11% Quarterly Growth in Downloads for Leading App Stores* (April 8, 2013), <http://canalys.com/newsroom/11-quarterly-growth-downloads-leading-app-stores>. Cumulatively, by mid 2013, the Apple App Store will have reached over 50 billion app downloads, and Google Play over 48 billion app downloads. See Darrell Etherington, *The App Store’s 50B Downloads Vs. Google Play’s 48B: Android Closes The Gap*, TECHCRUNCH (May 15, 2013), <http://techcrunch.com/2013/05/15/the-app-stores-50b-downloads-vs-google-plays-48b-android-closes-the-gap/>.

¹⁹⁶ See Peter Farago, *Holiday 2012 Delivers Historical Worldwide App Downloads*, Flurry Blog (Jan. 2, 2013), <http://blog.flurry.com/bid/92809/Holiday-2012-Delivers-Historical-Worldwide-App-Downloads>.

¹⁹⁷ See *50 Wireless Quick Facts*.

such as the Apple App Store, the Google Play, and the Windows Marketplace for Mobile. Some are unaffiliated with an OS vendor, like Getjar and Appia, the largest multi-OS app stores. Some are independent single-OS vendors, like Amazon's App Store for Android. A comparison of the major app stores' inventory over the last three years shows the dramatic growth in apps:

Application Store ¹⁹⁸	2010	2011	2013
iTunes App Store	>231,000 (iPhone) >11,000 (iPad)	>500,000 (iPhone) >101,000 (iPad)	>850,000 (iPhone) >350,000 (iPad) ¹⁹⁹
Google Play	>70,000	>500,000	800,000 ²⁰⁰
Handango/Appia ²⁰¹	>140,000	>140,000	>140,000 ²⁰²
GetJar	>75,000	>150,000	>150,000 ²⁰³
Nokia Ovi Store	>6,800	~50,000	>116,000 ²⁰⁴
BlackBerry App World	~7,000	~35,000	>100,000 ²⁰⁵
Windows Phone Marketplace	N/A ²⁰⁶	~40,000	>145,000 ²⁰⁷
Mobango	35,000 ²⁰⁸	>95,000	>100,000 ²⁰⁹
Amazon Appstore	N/A	3,800 ²¹⁰	>75,000 ²¹¹

¹⁹⁸ In this table, the figures for mid-2010 and mid to late-2011 are taken from Comments of Verizon Wireless, WT Docket No. 10-33, at 112 (filed Jul. 30, 2010); and Comments of Verizon Wireless, WT Docket No. 11-186, at 91 (filed Dec. 5, 2011), unless otherwise noted.

¹⁹⁹ Press Release, Apple Inc., Apple's App Store Marks Historic 50 Billionth Download (May 16, 2013), <http://www.apple.com/pr/library/2013/05/16Apples-App-Store-Marks-Historic-50-Billionth-Download.html>.

²⁰⁰ Veronica Maria Jarski, The App Arms Race: iOS vs. Android, MarketingProfs (May 4, 2013), <http://www.marketingprofs.com/chirp/2013/10690/the-app-arms-race-infographic>.

²⁰¹ PocketGear bought Handango in 2010 and rebranded Handango as Appia in February 2011. See Kevin C. Tofel, *App Store Smarts, Not Apps, May Be the Better Investment*, GIGAOM.COM, Mar. 30, 2011, <http://gigaom.com/mobile/appia-funding/>.

²⁰² See Appia, About Appia, <http://www.appia.com/about/> (last visited June 7, 2013) (figures are for multiple OSs).

²⁰³ See Top 5 Alternatives to Google Play Store, One Click Root (Dec. 9, 2012), <http://www.oneclickroot.com/android-apps/android-marketplaces/top-5-alternatives-to-google-play-store/>.

²⁰⁴ See TopApps, How Mobile Apps Have Changed the World (May 29, 2013), <http://www.topapps.net/windows/how-mobile-apps-have-changed-the-world.html/>.

²⁰⁵ Chris Velazco, *Just as CEO Heins Predicted, BlackBerry World Now Plays Home To Over 100,000 Apps*, TECHCRUNCH (March 21, 2013), <http://techcrunch.com/2013/03/21/just-as-ceo-heins-predicted-blackberry-world-now-plays-home-to-over-100000-apps/>.

²⁰⁶ Phones based on the Windows Phone 7 operating system, Microsoft's successor to Windows Mobile, were first launched in October 2010. See Press Release, Microsoft, *Microsoft and Partners Unveil Windows Phone 7 Global Portfolio* (Oct. 11, 2010), <http://www.microsoft.com/Presspass/press/2010/oct10/10-11MSWP7PR.mspx>.

²⁰⁷ See Windows Phone, Overview, <http://www.windowsphone.com/en-us/store/overview> (last visited June 4, 2013).

²⁰⁸ See Tricia Duryee, *Mauj Mobile Acquires UK's Mobango Catalog of Apps*, COMPAIDCONTENT, Aug. 17, 2010, <http://contentsutra.com/article/419-mauj-mobile-acquires-uks-mobango-catalog-of-apps/>.

²⁰⁹ Mobango, Instant Success for Your Mobile Apps 4, <http://www.slideshare.net/mobangoldt/mobango-apps-store-11904056>.

²¹⁰ Tricia Duryee, *Now Open: Amazon Appstore Launches With 3,800 Apps for Android*, ALLTHINGS D (March 22, 2011), <http://allthingsd.com/20110322-now-open-amazon-appstore-launches-with-3800-apps-for-android/>.

Widespread and Rapid Consumer Adoption of Mobile Apps. With this growth in downloads and available apps, the fact that more consumers have more apps on their mobile devices should come as no surprise. The percent of the mobile population that has download apps has increased from just over 25% in early 2010 to nearly 55% in November 2012.²¹² On average, in the U.S., a mobile user now has over 100 apps on their smartphone²¹³ – an increase of over 140% over the past year.²¹⁴

This rapid growth is changing users' wireless device habits: Consumers are spending increasing amounts of time on mobile apps. Since March 2011, consumers have nearly tripled the amount of time they spend each month on mobile apps – from nearly 60 billion minutes to nearly 160 billion minutes, while mobile web usage has remained constant around 20 billion minutes per month.²¹⁵ One analytics firm estimated that the U.S. consumer “spends an average of 2 hours and 38 minutes per day on smartphones and tablets. 80% of that time (2 hours and 7 minutes) is spent inside apps and 20% (31 minutes) is spent on the mobile web.”²¹⁶ These statistics reflect the high level of innovation and competition in the mobile app arena – dynamic forces that are growing the economy and enhancing the consumer experience.

²¹¹ Steve Peterson, *App Annie: Amazon Appstore Could Grow to the Size of iTunes*, GAMESINDUSTRY INTERNATIONAL (April 25, 2013), <http://www.gamesindustry.biz/articles/2013-04-25-app-annie-amazon-appstore-could-grow-to-the-size-of-itunes-or-google-play>.

²¹² See The Future of Mobile at 52.

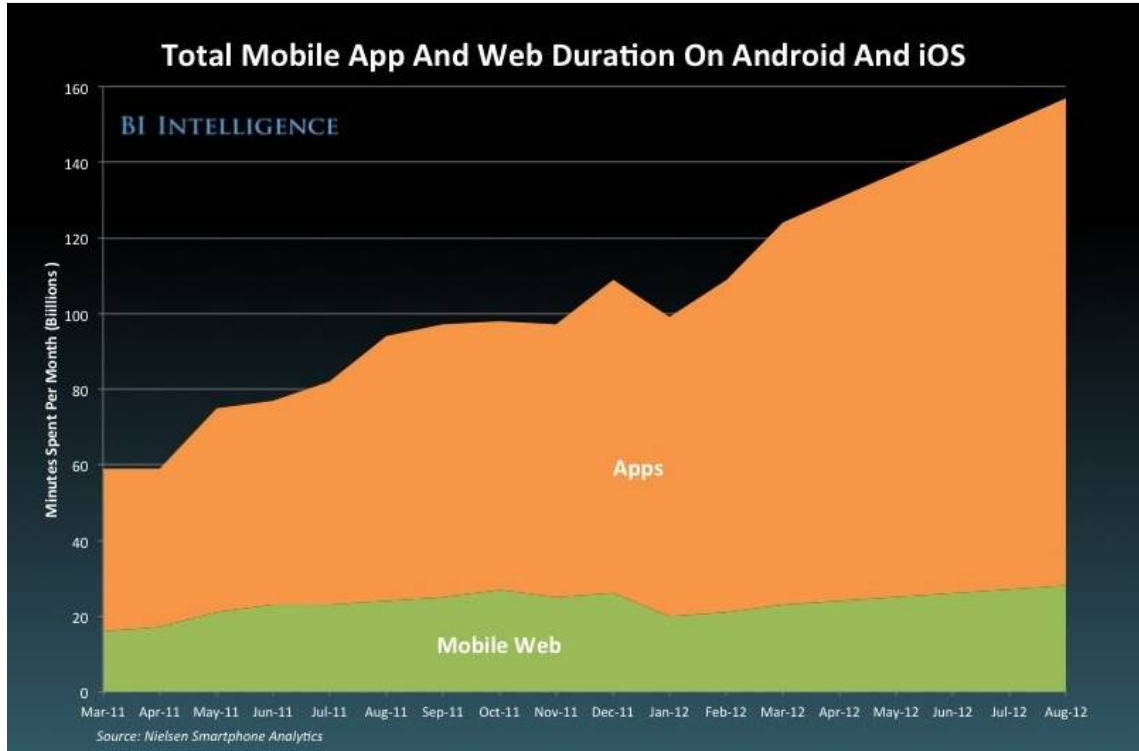
²¹³ *All About Apps Infographic*.

²¹⁴ See Paul Sawers, *Nielsen: US Smartphones Have an Average of 41 Apps Installed, Up from 32 Last year*, THENEXTWEB (May 16, 2012), <http://thenextweb.com/insider/2012/05/16/nielsen-us-smartphones-have-an-average-of-41-apps-installed-up-from-32-last-year/>.

²¹⁵ See The Future of Mobile at 75.

²¹⁶ Simon Khalaf, *Flurry Five-Year Report: It's an App World. The Web Just Lives in It*, Flurry Blog (April 3, 2013), <http://blog.flurry.com/?Tag=Usage%20Statistics>.

Minutes Spent Monthly on Mobile Apps vs. Mobile Web²¹⁷



In 2012, U.S. mobile commerce (“m-commerce”) topped \$5 billion,²¹⁸ representing one-fifth of all e-commerce traffic.²¹⁹ By 2017, mobile commerce will generate over \$108 billion in retail sales.²²⁰ Globally, mobile payments will reach a “staggering” \$1 trillion by 2017, with approximately two-thirds of that amount from m-commerce.²²¹ Consumers are increasingly using their apps to fuel growth in three particular categories of mobile commerce: e-commerce, mobile payments, and mobile money management. The mobile app market features a growing

²¹⁷ See The Future of Mobile at 75.

²¹⁸ See *id.* at 39.

²¹⁹ See *id.* at 40.

²²⁰ See Lauren Indvik, *Mobile to Account for 25% of U.S. Online Sales by 2017*, MASHABLE (April 24, 2013), <http://mashable.com/2013/04/24/mcommerce-sales-forecast/>.

²²¹ See Chris Martin, *Report: Mobile Payments to Top \$1 Trillion by 2017*, Intuit GoPayment Blog (Jan. 23, 2013), <http://blog.gopayment.com/money-trends/report-mobile-payments-to-top-1-trillion-by-2017/>.

array of competitive options, with innovations occurring at breakneck speed. Consumers have embraced the mobile app ecosystem with enthusiasm, helping drive economic growth – thereby creating a virtuous cycle of value and investment.

IV. CONSUMERS BENEFIT FROM COMPETITION IN THE INPUT MARKET SEGMENTS

Competition in mobile broadband input markets, including spectrum, backhaul, and infrastructure, also fuels rivalry in the larger wireless services sector.²²² While the marketplace for each of these segments continues to thrive, policymakers must remain vigilant to continue to make additional spectrum available and remove regulatory barriers to investment.

A. While Additional Spectrum Resources and Secondary Markets Have Increased Competitive Opportunities, More Spectrum Will Be Needed

Sufficient spectrum resources are, of course, an essential wireless input, necessary to continue the robust growth occurring throughout the mobile ecosystem. Wireless providers like Verizon Wireless have efficiently used the available spectrum to meet the ever-growing demand for more mobile traffic. More spectrum to address this exponentially expanding demand is coming to market – and, as the National Broadband Plan recognized, even more spectrum will be needed.

For years, Verizon Wireless and other providers have invested billions of dollars in deploying more advanced radio technologies and optimizing network design for more efficient spectrum use. These technological investments include the migration from analog to digital technologies and deployment of next generation networks, increased frequency reuse, antenna sectorization, and cell splitting, all of which have enabled the wireless industry to drive

²²² *Sixteenth Report*, 28 FCC Rcd at 3906 ¶ 319.

substantial efficiencies. The results have been significant – greater capacity and increasingly sophisticated data products and services. This growth has been achieved even though, as the Commission noted just two years ago, “mobile wireless operators primarily use licenses associated with three different frequency bands to provide mobile voice and, in most cases, mobile data services: Cellular (in the 850 MHz band), SMR (in the 800/900 MHz band), and broadband PCS (in the 1.9 GHz band).”²²³ Additional spectrum resources have fast come into use. The AWS-1 and 700 MHz auctions, as well as the BRS/EBS modernization and other Commission initiatives (including MSS and WCS reform), brought much more spectrum into the mobile wireless market. These spectrum resources are critical to meeting consumer demand and creating new opportunities for providers.

Further, as discussed above, secondary markets are an effective means of providing access to spectrum.²²⁴ Carriers of all sizes purchase and lease spectrum in the secondary market on a regular basis. Indeed, the FCC approves thousands of transfer/assignment applications and spectrum leasing applications each year, and those transactions have been increasing.²²⁵ All carriers, including new entrants and smaller providers, have access to spectrum through the secondary market.

Despite these opportunities, it is clear that still more spectrum will be needed. The National Broadband Plan found that “[t]he growth of wireless broadband will be constrained if government does not make spectrum available to enable network expansion and technology

²²³ *Fifteenth Report* at 9822 ¶ 269.

²²⁴ *See supra* Section II.B.2 (discussing the importance of secondary markets, including leasing, to making spectrum available and the increasing amount of spectrum leasing).

²²⁵ *Id.*

upgrades.”²²⁶ Indeed, it has been five years since the 700 MHz auction – the last major spectrum auction the Commission conducted. Verizon Wireless thus fully supports the National Broadband Plan’s call for 500 additional MHz of spectrum for mobile broadband in the next ten years. Maximizing the amount of licensed spectrum made available in the upcoming 600 MHz incentive auction, proceeding with the auctions required under the Spectrum Act, and continuing to identify spectrum that can be reallocated from federal to commercial use, will help meet this goal and address the growing needs of wireless consumers. As President Obama observed in his June 14, 2013 Presidential Memorandum, *Expanding America’s Leadership in Wireless Innovation*:

Expanding the availability of spectrum for innovative and flexible commercial uses, including for broadband services, will further promote our Nation’s economic development by providing citizens and businesses with greater speed and availability of coverage, encourage further development of cutting-edge wireless technologies, applications, and services, and help reduce usage charges for households and businesses.²²⁷

B. Competition in Backhaul Provides Ample Choices for Mobile Providers to Meet Their Needs

There is also extensive and growing competition for mobile backhaul services. Analysts project that demand for mobile backhaul will grow by 9.7 times between 2011 and 2016.²²⁸ With

²²⁶ NATIONAL BROADBAND PLAN at 77; *see also* Presidential Memorandum, The White House, Presidential Memorandum: Unleashing the Wireless Broadband Revolution (June 28, 2010), <http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution> (“America’s future competitiveness and global technology leadership depend, in part, upon the availability of additional spectrum.”).

²²⁷ PRESIDENTIAL MEMORANDUM, EXPANDING AMERICA’S LEADERSHIP IN WIRELESS INNOVATION, at 1 (June 14, 2013) <http://www.whitehouse.gov/the-press-office/2013/06/14/presidential-memorandum-expanding-americas-leadership-wireless-innovatio>.

²²⁸ *See U.S. Mobile Backhaul Demand Forecast to Grow More Than Nine Times in the Next Four Years* (Mar. 13, 2012), <http://www.fiercemobilecontent.com/press-releases/us-mobile-backhaul-demand-forecast-grow-more-nine-times-next-four-years>. The global demand for mobile backhaul equipment is projected to reach \$10.4 billion in 2014 (compared to \$7.2 billion in 2009). *See* Infonetics Research Press Release, *Shift Seen in Operator Strategy for* (continued on next page)

this growth comes opportunities for expansion and entry. As Insight Research notes, the “large-scale ‘mass migration’ of wireless backhaul from TDM to Ethernet,” requiring new fiber deployment, has been a “specific factor contributing to particularly rapid growth” of Ethernet service.²²⁹ The marketplace is “rife with a large array of operators, including incumbent local exchange carriers (ILECs), competitive local exchange carriers (CLECs), cable multiple system operators (MSOs), fiber-based providers, microwave operators, and resellers.”²³⁰ Competitive wholesalers “are being particularly aggressive in targeting new wireless backhaul opportunities,” while cable operators “such as Charter Communications, Comcast Business, Cox Carrier Services and Time Warner Cable Business Class have become a credible threat in the wireless backhaul race.”²³¹

Cable providers’ revenues from mobile backhaul services were approximately \$600 million in 2012, and they are expected to reach approximately \$900 million by 2015.²³² Comcast – which has “increased [its] number of installed towers by about 79% since 2010”²³³ –

Mobile Backhaul; Equipment Spending Up 21% (Apr. 21, 2010), <http://www.infonetics.com/pr/2010/Mobile-Backhaul-and-Microwave-Market-Highlights.asp>.

²²⁹ INSIGHT RESEARCH CORPORATION, CARRIER AND ETHERNET SERVICES: PUBLIC ETHERNET IN METRO & WIDE AREA NETWORKS 2011-2016 7 (Aug. 2011).

²³⁰ FROST & SULLIVAN, U.S. MOBILE BACKHAUL SERVICES MARKET: WIRELESS SERVICE PROVIDER SPENDING TRENDS, BCS5-8 6 (Oct. 2011) (“U.S. MOBILE BACKHAUL SERVICES MARKET”); *see also* JENNIFER PIGG, YANKEE GROUP, 4G TRENDS, WHOLESALE MOBILE BACKHAUL: THERE’S GOLD IN THEM THERE HAULS 4 (June 2011) (“WHOLESALE MOBILE BACKHAUL”); SYNESAE & CHARBONNEAU, TELECOM AND DATA SERVICES, INDUSTRY OVERVIEW, FIBER: A SECTOR EVOLVES 17-18.

²³¹ Sean Buckley, *Telco BackHaul Strategies: Wireline Wholesale Carriers Feed Off the Wireless Backhaul Bonanza*, FierceTelecom, at 2 (Nov. 14, 2011), <http://www.zayo.com/sites/default/files/fiercetelecom-mobile-backhaul-ebook11.14.11.pdf>.

²³² Jeff Baumgartner, *Cable’s Cut of the Biz Services Pie To Eclipse \$7B*, Light Reading (Nov. 29, 2012), http://www.lightreading.com/document.asp?doc_id=227457&site=lr_cable&f_src=lrailynewsletter (citing Heavy Reading Senior Analyst Alan Breznick).

²³³ *Q1 2012 Comcast Corporation Earnings Conference Call – Final*, FD (Fair Disclosure) Wire, Transcript 050212a4767051.751 (May 2, 2012) (statement by Comcast Chairman & CEO Brian Roberts).

“anticipates the addressable backhaul market within its footprint is roughly \$1 billion.”²³⁴

Analysts have found that this “[g]reater competition among vendors, as well as competing backhaul platforms, is creating downward pricing pressures for backhaul service providers; which, in turn, is impacting their revenues and profitability.”²³⁵

Sprint’s recent experience in the wireless backhaul market further confirms that this is a fiercely competitive market. In 2011, Sprint announced that it had awarded contracts for backhaul expansion for 15,000 sites, and it expected to award contracts for an *additional* 15,000 sites in mid-2012.²³⁶ Sprint has stated that as a result of this competitive bidding process, it “will end up with ‘25 to 30 significant backhaul providers,’ that will likely be a mix of incumbent LECs, cable MSOs and alternative carriers, all of whom will be expected to deliver Ethernet predominantly over fiber for Sprint’s new multi-mode network.”²³⁷ Sprint has attested that this expansion has given it the “opportunity to use fiber or microwave and we choose site by site,”²³⁸ and, as a result, has “a very much improved cost structure.”²³⁹ A Sprint executive recently explained to analysts that “all of [Sprint’s] towers will be Ethernet,” and “for roughly the same cost of \$1,500 a month” for three T1 lines at each tower, “you have almost 20 times the bandwidth through that location.”²⁴⁰

²³⁴ WHOLESale MOBILE BACKHAUL at 4.

²³⁵ U.S. MOBILE BACKHAUL SERVICES MARKET at 6.

²³⁶ See Carol Wilson, *Sprint to Reveal Backhaul Contract Winners Friday*, Light Reading (Oct. 5, 2011), http://www.lightreading.com/document.asp?doc_id=213050.

²³⁷ *Id.* (emphasis added).

²³⁸ *Sprint 4G Strategy/Network Update – Final*, FD (Fair Disclosure) Wire, Transcript 100711a4207432.732 (Oct. 7, 2011).

²³⁹ *Id.* (statement by Steve Elfman, President, Sprint - Network Operations & Wholesale).

²⁴⁰ *Sprint Nextel Corporation at Pacific Crest Global Leadership Technology Forum – Final*, FD (Fair Disclosure) Wire (Aug. 13, 2012) (statement by Sprint VP, Strategic Programs Marty Nevshemal).

Further, when Sprint put up cell sites for bid, Verizon responded to Sprint's RFQ for cell sites with pricing and availability at the sites in its region, but was awarded the backhaul business at less than 6% of the sites in the Verizon incumbent footprint.²⁴¹ Although Verizon has no direct information about what Sprint did with the contracts and sites Verizon did not win, public reports indicate that "all cable operators are involved."²⁴²

Dramatic increases in wireless data traffic are fueling this competition for mobile backhaul services,²⁴³ and making it necessary to upgrade to higher-capacity facilities in all areas. As Level 3 explained, 4G data services are "really the catalyst for the ubiquity of Ethernet and the ubiquity of fiber to the tower."²⁴⁴ Moreover, this "[g]reater competition within the mobile backhaul services market" is "having a negative effect on the prices for emerging platforms such as Ethernet."²⁴⁵

C. While Important Steps Have Been Taken to Facilitate Infrastructure Deployment, More Can and Should Be Done

Infrastructure continues to play an important competitive role in the economics of wireless networks, especially given the expansion of wireless broadband. Congress moved the ball forward in early 2012 when it enacted Section 6409(a) of the Spectrum Act,²⁴⁶ which

²⁴¹ See Ex Parte Letter from Kathleen Grillo, Verizon, to Marlene Dortch, FCC, WC Docket No. 05-25 & RM-10593 (Sept. 12, 2012).

²⁴² NOMURA EQUITY RESEARCH REPORT at 2.

²⁴³ Commission staff reported a year ago that "mobile data demand is expected to grow between 25 and 50 times current levels within 5 years." FCC Staff Technical Paper, *Mobile Broadband: The Benefits of Additional Spectrum* at 5 (Oct. 2010), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-302324A1.pdf.

²⁴⁴ Carol Wilson, *Level 3: Mobile Backhaul Brutally Competitive*, Light Reading (Oct. 7, 2011) (video of interview with Amanda Tierney, VP Wholesale Market Management, Level 3), http://www.lightreading.com/video.asp?doc_id=213138.

²⁴⁵ U.S. MOBILE BACKHAUL SERVICES MARKET at 16.

²⁴⁶ See Spectrum Act § 6409(a), codified at 47 U.S.C. § 1455(a).

streamlined the local zoning process for collocations of wireless facilities. Spurred on by this legislation, in 2013, then-Chairman Julius Genachowski announced a number of new efforts being undertaken as part of the Commission's Broadband Acceleration Initiative. Moreover, Acting Chairwoman Mignon Clyburn saluted the Supreme Court's affirmance of the local zoning "shot clock," which she said would "remov[e] obstacles to the timely build-out of wireless broadband services," which she said "remains a key priority."²⁴⁷

Several recent regulatory developments beyond the helpful provisions of the Spectrum Act give reason to be optimistic about the future of the wireless infrastructure market. First, the Wireless Bureau issued useful guidance aimed at avoiding ambiguity concerning the implementation of Section 6409(a).²⁴⁸ Second, the Commission accepted comments on a proposal to expedite action on requests to erect temporary towers, and it issued a waiver exempting such requests from public notice.²⁴⁹

While these are important steps, the Commission can and should do more to continue to facilitate infrastructure deployment. For example, the Commission has announced plans to reexamine its tower siting shot clock policy, initiate proceedings to facilitate DAS and small cell

²⁴⁷ Statement from FCC Acting Chairwoman Mignon Clyburn on Today's Supreme Court Decision – *Arlington v. FCC*, *News Release*, (May 20, 2013), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0520/DOC-321087A1.pdf.

²⁴⁸ See Wireless Telecommunications Bureau Offers Guidance On Interpretation of Section 6409(a) Of The Middle Class Tax Relief And Job Creation Act of 2012, *Public Notice*, 28 FCC Rcd 1 (Jan. 25, 2013).

²⁴⁹ See Wireless Telecommunications Bureau Seeks Comment on Petition of CTIA—The Wireless Association for Expedited Rulemaking and Blanket Waiver Regarding Public Notice Procedures for Temporary Towers, *Public Notice*, 28 FCC Rcd 210 (2013); see also *Amendment of Parts 1 and 17 of the Commission's Rules Regarding Public Notice Procedures for Processing Antenna Structure Registration Applications for Certain Temporary Towers*; 2012 Biennial Review of Telecommunications Regulations, Order, RM-11688 & WT Docket No. 13-32, FCC 13-72 (rel. May 16, 2013).

deployment, and work on model siting ordinances.²⁵⁰ Verizon Wireless encourages the Commission to advance these efforts, as well as to take steps to streamline siting on federal lands, a longstanding issue critical to expanding wireless service in many rural areas.

V. THE SIXTEENTH REPORT SUFFERS FROM FLAWS THAT SHOULD BE CORRECTED IN THE SEVENTEENTH REPORT

Like the *Fourteenth Report* and *Fifteenth Report* before it, the *Sixteenth Report* included significant analytical flaws. These should be remedied in the *Seventeenth Report*.

A. The *Sixteenth Report* Again Errs in Failing to Make an Effective Competition Finding

Although Congress directed the Commission to report annually on the state of the CMRS market, and to include in each report “an analysis of *whether or not* there is effective competition,”²⁵¹ the Commission failed to fulfill this obligation in the *Sixteenth Report*, just as it had failed to do in the two prior reports. Instead, the *Report* argued that “the mobile wireless ecosystem is sufficiently complex and multi-faceted that it would not be meaningful to try to make a single, all-inclusive finding regarding effective competition....”²⁵² It thus again declined to characterize the market even though each of the first thirteen *Competition Reports* provided *some* assessment of the CMRS market²⁵³ – and each of the reports issued from 2003 to 2008 had

²⁵⁰ See FCC Chairman Julius Genachowski Announces New Broadband Acceleration Initiative Actions; Clarifies Rules to Speed Wireless Infrastructure Deployment; Moves to Expedite Temporary Cell Towers, News Release (Jan. 25, 2013), available at http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-318589A1.pdf.

²⁵¹ 47 U.S.C. § 332(c)(1)(C) (emphasis added). See also *Sixteenth Report*, 28 FCC Rcd at 4033, Concurring Statement of Commissioner Robert M. McDowell (“Congress ... tasked us with making a finding as to whether this sector is *competitive*.”).

²⁵² *Id.* at 3733 ¶ 14.

²⁵³ For example, while the *First Report* (1995) found that the market was “not fully competitive,” the *Second Report* through the *Seventh Report* (1997-2002) found that competition was “emerging” with a trend toward “increased competition.” Implementation of Section 6002(b) of the Omnibus Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, *First Report*, 10 FCC Rcd 8844, 8872 ¶ 84 (1995) (“*First Report*”) (“[T]he mobile telephone service segment of the CMRS business is not (continued on next page)

concluded that “the CMRS marketplace is effectively competitive.”²⁵⁴ The failure to make such a finding is contrary to the statute and fails to reflect the reality of the marketplace – as documented by the Commission’s own *Sixteenth Report*. The *Seventeenth Report* should – consistent with the Act’s provisions – make an affirmative finding of effective competition. In Commissioner Pai’s words, “the Communications Act does not give [the Commission] the discretion to dodge.”²⁵⁵

B. The *Sixteenth Report* Continues to Place Undue Emphasis on Market Structure at the Expense of Market Behavior

The *Sixteenth Report* continues to emphasize HHI measures and to focus on consolidation at the expense of market performance data that demonstrate robust competition.²⁵⁶ The *Sixteenth Report*, however, tells a very clear story – one that reflects the competition, dynamism, and differentiation that is the wireless ecosystem. For example, the *Report* cites increasing output across a number of vectors, including an increase in mobile data traffic of

fully competitive”; *Second Report*, 12 FCC Rcd 11266, 11269 (1997) (“[C]ompetition in the mobile marketplace is emerging.”); *Third Report*, 13 FCC Rcd 19746, 19749 (1998) (“[S]ubstantial progress has been made towards a truly competitive mobile telephone marketplace.”); *Fourth Report*, 14 FCC Rcd 10145, 10206 (1999) (“[T]he mobile telephone market has made steady competitive progress.”); *Fifth Report*, 15 FCC Rcd 17660, 17663 (2000) (“[T]he CMRS industry continues to benefit from the effects of increased competition”; *Sixth Report*, 16 FCC Rcd at 13431 (“The past year has continued the positive trends of increased competition in the CMRS industry described in the *Fifth Report*.”); *Seventh Report*, 17 FCC Rcd 12985, 13066 (2002) (“The past year has continued the positive trends of increased competition in the CMRS industry described in previous reports.”).

²⁵⁴ Implementation of Section 6002(b) of the Omnibus Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, *Eighth Report*, 18 FCC Rcd 14783, 14876 ¶ 217 (2003); *Ninth Report*, 19 FCC Rcd 20597, 20689 ¶ 225 (2004); *Tenth Report*, 20 FCC Rcd 15908, 15985 ¶ 207 (2005); *Eleventh Report*, 21 FCC Rcd 10947, 11031 ¶ 216 (2006); *Twelfth Report*, 23 FCC Rcd 2241, 2354 ¶ 293; (2008); *Thirteenth Report*, 24 FCC Rcd 8741, 6311 ¶ 277. (2009).

²⁵⁵ *Sixteenth Report*, 28 FCC Rcd at 4037, Statement of Commissioner Ajit Pai.

²⁵⁶ See Gerald R. Faulhaber et al. *Assessing Competition in U.S. Wireless Markets: Review of the FCC’s Competition Reports*, 64 Fed Comm. L. J. 319 (2011-2012) (detailing these and other errors in the FCC’s methodology for assessing competition in the wireless industry).

270% from 2010 to 2011²⁵⁷; various measures that “show that mobile wireless prices have declined significantly since the launch of PCS service,” including a decline in the wireless CPI by 3.6% from 2010 to 2011²⁵⁸; and an increase in annual incremental capital investment by wireless operators from \$24.9 billion in 2010 to \$25.3 billion in 2011.²⁵⁹ This market performance clearly supports a conclusion of effective competition.

1. The *Sixteenth Report* Continues to Focus Too Heavily on HHI Measures to Assess Competitive Trends

At certain points the *Sixteenth Report* recognizes that the mobile wireless market, due to economies of scale, is likely to be more concentrated than markets outside the high-technology field. Nevertheless, the *Report* still emphasizes the impact of HHI measures on competition, and erroneously takes a carrier-centric approach that minimizes the role that other companies play in driving competition in the mobile space.

It is well established within academia and the antitrust enforcement literature that market shares alone simply do not paint a comprehensive portrait of competition within an industry. As Areeda and Hovenkamp observe in the leading antitrust treatise, even a high market share will not necessarily denote market power.²⁶⁰

Michael Katz (the Commission’s former Chief Economist) and Howard Shelanski (Director of the Federal Trade Commission’s Bureau of Economics and President Obama’s

²⁵⁷ *Id.* at 3711.

²⁵⁸ *Id.* at 3875-76 ¶¶ 265-66 & Table 37.

²⁵⁹ *Id.* at 3839 ¶ 213 & Table 33.

²⁶⁰ See PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION § 506d (Aspen Publishers 2007) (“Substantial market power can persist only when there are significant and continuing barriers to expansion and entry.”); see also *id.* § 506a (“[T]he degree of market power depends on the response of buyers to price changes. Greater responsiveness (greater ‘elasticity’ of demand) minimizes market power.”).

nominee to head the Office of Information and Regulatory Affairs at the White House Office of Management and Budget) similarly have noted that “current product-market shares may indicate very little about the future of the industry or about whether any given firm will possess significant market power.”²⁶¹ The Federal Trade Commission (“FTC”) and the Department of Justice (“DOJ”), the two agencies charged with implementing and enforcing the nation’s antitrust laws, likewise have reiterated the need to look beyond concentration. The revised Horizontal Merger Guidelines issued by these two entities state that “[m]arket shares may not fully reflect the competitive significance of firms in the market” and thus, must only be consulted in conjunction with other evidence of the state of competition.²⁶²

The *Sixteenth Report* at times seems to recognize as much, stating that “an analysis of other factors, such as prices, entry conditions and non-price rivalry, may nonetheless find that a market with high concentration levels is competitive”²⁶³ and that “market performance metrics provide more direct evidence of competitive outcomes and the strength of competitive rivalry than intermediate factors, such as concentration measures.”²⁶⁴ The *Report* also recognizes that “[a] high level of network deployment costs (a type of fixed cost of building network capacity) in

²⁶¹ Michael L. Katz & Howard A. Shelanski, ‘Schumpeterian’ Competition and Antitrust Policy in High-Tech Markets, 14 COMPETITION 47, *10 (2005).

²⁶² U.S. DEPARTMENT OF JUSTICE AND FEDERAL TRADE COMMISSION, HORIZONTAL MERGER GUIDELINES § 5.3 (issued Aug. 19, 2010), <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> (“HORIZONTAL MERGER GUIDELINES”).

²⁶³ *Sixteenth Report*, 28 FCC Rcd at 3752 ¶ 51; see also *id.* at 3759-60 ¶ 61 (internal citation omitted) (“High market concentration is not synonymous with a non-competitive market or with market power – the ability to charge prices above the competitive level for a sustained period of time. High market concentration may indicate that a firm or firms potentially may be able to exercise market power, but market concentration measures alone are insufficient to draw such a conclusion.”).

²⁶⁴ *Id.* at 3732-33 ¶ 10.

relation to the number of customers may limit the number of firms that can enter and survive in a market.”²⁶⁵

Nevertheless, the *Sixteenth Report* still emphasizes HHI figures and purported concentration, addressing these factors over a span of eight paragraphs including one table and three charts.²⁶⁶ The *Report* notes small increases in average HHI during 2010 and 2011,²⁶⁷ and Chart 1 emphasizes the fact that recent HHI values have been above the “highly concentrated” threshold without acknowledging that threshold’s limited utility in the context of telecommunications markets.²⁶⁸ This focus on HHI figures is misguided, as the *Report* elsewhere recognizes. The *Seventeenth Report* should focus more on competitive *outcomes* in the market – namely, increasing output, declining prices, and massive, ongoing investment – and less on measures of market concentration, particularly measures that examine carrier market shares to the exclusion of other companies.

2. An Evaluation of the Effects of Consolidation Reveals Significant Consumer Welfare Benefits

Moreover, any analysis of consolidation must account for the *benefits* that such consolidation can bring. The *Report* observes that many recent wireless mergers have not had an anticompetitive effect:

In many instances, the entities that were combined had not previously competed in the same geographic market. As a result,

²⁶⁵ *Id.* at 3766-67 ¶ 79 (internal citation omitted).

²⁶⁶ *See id.* at 3755-60 ¶¶ 54-61.

²⁶⁷ *Id.* at 3758, Chart 1.

²⁶⁸ *Id.*

these transactions resulted in the expansion of the coverage of the newly combined entity.²⁶⁹

The current market structure reflects a deliberate shift away from the cost-duplication that attended the previously fractured wireless marketplace, and toward a regime in which wireless providers can achieve scale and thereby increase customer welfare.²⁷⁰ As the market evolved, prices have continued to fall and usage continued to climb. All of this occurred at a time when providers continued to cover more and more of the population.²⁷¹ These clearly pro-consumer trends have occurred while and after the FCC approved a number of major wireless transactions. (See chart *supra* page 27.)

3. The Continued Exclusion of MVNOs as Distinct Market Participants Skews the *Sixteenth Report's* Evaluation of Concentration

The *Sixteenth Report's* concentration analysis is also flawed by its failure to recognize MVNO connections in its competition assessment. The *Report* concedes that “[t]he strategic partnerships between MVNOs and facilities-based providers increase competition and consumer welfare by providing service to various market segments using the capacity of the hosting facilities-based provider and the marketing strategy and distribution network of the MVNO.”²⁷² It also notes that “[s]ome facilities-based providers, especially those that specialize in pre-paid plans, state that they compete with MVNOs, including TracFone.”²⁷³ Nevertheless the *Report* asserts that, “[f]ollowing widespread industry practices,” it “attribute[s] the subscribers of

²⁶⁹ *Sixteenth Report*, 28 FCC Rcd at 3762 ¶ 69.

²⁷⁰ *See id.* at 3958, Table 68 (comparing number of competitors in 10 nations, none of which had more than the U.S.).

²⁷¹ *See generally* FCC CMRS Competition Reports 2000-2008.

²⁷² *Sixteenth Report*, 28 FCC Rcd at 3741 ¶ 35.

²⁷³ *Id.*

MVNOs to their host facilities-based providers, including when it calculates market concentration metrics.”²⁷⁴ The competitive impact of MVNOs cannot, however, be so easily dismissed.

As explained in depth above, MVNOs compete along a host of vectors, differentiating themselves by assembling unique modules of content, applications, and devices that may not be available from their underlying carriage providers. As the *Sixteenth Report* recognizes, “MVNOs often increase the range of services offered by the host facilities-based provider by targeting certain market segments, including segments previously not served by the hosting facilities-based provider.”²⁷⁵ In this market, MVNOs have a great deal of power to attract consumers, and compete against service providers in very real ways.

MVNOs have achieved great success in the market. Since 2003, the year after the mandatory resale requirements sunset, MVNOs have more than tripled,²⁷⁶ and MVNO customers now comprise 10% of all wireless subscribers. As the *Sixteenth Report* acknowledges, at the end of 2011, MVNO provider TracFone Wireless had “more than 19 million subscribers in the

²⁷⁴ *Id.* at 3741 ¶ 36. The *Report* includes a single cited source for the proposition that MVNOs may not exert substantial competitive pressure. See *id.* at 3741 ¶ 35 n.125, citing P. Kalmus and L. Wiethaus, *On the Competitive Effects of Mobile Virtual Network Operators*, TELECOMMUNICATIONS POLICY, Vol. 34, 2010. That source does not even purport to undertake any empirical analysis of how providers behave in the market. Rather, in seven pages of text, the authors construct a “simple analytical framework” to model how providers *might* behave in the market, and conclude that facilities-based providers will not sell capacity to MVNOs that might compete against them in the retail market. The data tell a very different story, in which an MVNO can become the fifth-largest retail provider in the nation and exert real pricing pressure on facilities-based carriers.

²⁷⁵ *Sixteenth Report*, 28 FCC Rcd at 3739 ¶ 31.

²⁷⁶ Compare Industry Analysis and Technology Division, Wireline Competition Bureau, FCC, Local Telephone Competition: Status as of December 31, 2003, Table.13 (June 2004), available at http://transition.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom0604.pdf (noting that as of December 2003, MVNO Resale Subscribers totaled about 9.4 million (6 percent of 157,042,082 total subscribers)) with Dec. 2011 Local Telephone Competition Data, Table 18 (noting that as of December 2011, MVNO resale subscribers totaled about 30 million (10 percent of 298,293,000 total subscribers)).

United States,” making it the *fifth largest* mobile wireless service provider.²⁷⁷ Further, the *Sixteenth Report* again recognized that “TracFone ... is generally regarded as the leader in the low-end prepaid segment.”²⁷⁸ Such an independently owned entity must be considered relevant in a competitive analysis.

There is no basis for categorically dismissing the competitive threat posed by a market participant simply because it relies on a retail competitor for one wholesale input.²⁷⁹ Such an analysis should instead focus on “the extent to which customers view various services as substitutes.”²⁸⁰ Customers, of course, often do not care – and may not know – whether a service involves resold offerings available at retail from another provider, focusing instead on price, quality, and the family of devices, services, applications, and capabilities offered by the brand.²⁸¹

C. The *Sixteenth Report*’s Spectrum Analysis Is Flawed

The *Sixteenth Report*’s spectrum analysis repeats two errors that have appeared in the last several mobile wireless competition reports. First, the *Sixteenth Report* continues to differentiate unnecessarily between mobile wireless spectrum bands below and above 1 GHz in its competitive analyses, suggesting that sub-1 GHz spectrum is more important or valuable than

²⁷⁷ See *Sixteenth Report*, 28 FCC Rcd at 3740 ¶ 34.

²⁷⁸ *Id.* at 3818 ¶ 174 (citation omitted).

²⁷⁹ See, e.g., *FTC v. Cardinal Health Inc.*, 12 F. Supp. 2d 34, 39-53 (D.D.C. 1998) (observing that all forms of distribution must, at some level, compete with each other and thus undertaking a careful evaluation of whether manufacturers, wholesalers, and retailers were in the same market for antitrust purposes based on whether customers can substitute among them easily).

²⁸⁰ United States Department of Justice, *Ex Parte Submission*, GN Docket No. 09-51, at 12 (Jan. 4, 2010).

²⁸¹ See, e.g., Personal Communications Industry Association’s Broadband Personal Communications Services Alliance’s Petition for Forbearance For Broadband Personal Communications Services, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 13 FCC Rcd 16857, 16874-75 ¶ 35 (1998) (internal citations omitted).

higher band spectrum.²⁸² These distinctions are competitively meaningless. As Verizon Wireless has demonstrated, every spectrum band that is suitable for mobile networks has both advantages and disadvantages, depending on the type of network the provider wants to deploy, the geographic areas it wants to cover, the network speeds it seeks to achieve, its other spectrum holdings, and the devices it offers to customers.²⁸³ Higher band spectrum in particular has distinct capacity advantages – advantages that are especially important given rising demand for more spectrum capacity. There is thus no inherent comparative value between high- and low-band spectrum, because that value varies carrier to carrier and over time depending on the optimal mix of services and coverage it wants to achieve.²⁸⁴ In any event, the robust secondary spectrum market will reflect different carriers’ perceptions of different spectrum values in pricing spectrum for sale and lease.

Second, the *Sixteenth Report* fails to fully account for spectrum in the AWS-4/MSS and BRS/EBS bands in the Commission’s competitive spectrum analysis.²⁸⁵ As Verizon Wireless has shown, 40 MHz of AWS-4 spectrum, 19.275 MHz of Big LEO MSS spectrum, an additional 21 MHz of BRS spectrum, and 111.625 MHz of EBS spectrum is suitable and available for the provision of mobile wireless and broadband services, and therefore should be included in any

²⁸² See, e.g., *Sixteenth Report*, 28 FCC Rcd at 3789 ¶ 121 (stating that lower frequency spectrum is more “suitable for establishing baseline, or foundational, network coverage”); *id.* at 3792 ¶ 125 (suggesting that spectrum below 1 GHz has achieved a higher value at auction “because of its relative advantages for coverage and in-building penetration”).

²⁸³ See, e.g., Reply Comments of Verizon Wireless, WT Docket No. 12-269, at 19-29 (Jan. 7, 2013).

²⁸⁴ See, e.g., Comments of Verizon Wireless, IB Docket No. 12-343, at 29-31 (Jan. 28, 2013).

²⁸⁵ See *Sixteenth Report*, 28 FCC Rcd 3700 at 3780-82 ¶¶ 105-07, 3786-88 ¶¶ 116-18 & nn.396-97.

commercial mobile spectrum review.²⁸⁶ The Commission should correct these analytical errors in the *Seventeenth Report*.

D. The *Sixteenth Report* Deemphasizes Falling Prices

The record compiled for the *Sixteenth Report* included extensive data regarding declining prices for wireless service of all types. The *Report*'s discussion of price rivalry, however, declines to acknowledge price reductions head-on, instead presenting a misleading picture based on selected facts. For example, the *Report* itself concludes that prices *fell*: The Wireless Telephone Services CPI declined by 2.9% from 2009 to 2010, and by another 3.6% from 2010 to 2011 – even as the overall CPI *increased* by 1.6% in the first period and by 3.2% in the second period.²⁸⁷ And the effective per-megabyte price for wireless data service dropped by 89%, from \$0.47 in the third quarter of 2008 to about \$0.05 in the fourth quarter of 2010.²⁸⁸ These facts – set forth in the *Sixteenth Report*'s discussion of industry “performance and outcomes” – were ignored in the “pricing rivalry” discussion. These facts should have been discussed there as well to make clear that, though price structure is evolving (as one would expect in a dynamic market), prices themselves are falling. The *Seventeenth Report* should address this point directly, hewing to the Congressional demand for an accurate depiction of the wireless market.

²⁸⁶ See Comments of Verizon Wireless, WT Docket No. 12-269, at 20-27 (Nov. 28, 2012); Reply Comments of Verizon Wireless, WT Docket No. 12-269, at 8-14 (Jan. 7, 2013); Comments of Verizon Wireless, IB Docket No. 12-343, at 8-10 (Jan. 28, 2013); Reply Comments of Verizon Wireless, IB Docket No. 12-343, at 1-6 (Feb. 25, 2013); Letter from Kathleen Grillo, Verizon, to Marlene H. Dortch, FCC, IB Docket No. 12-343 & WT Docket No. 12-269, at 1-2 (Mar. 4, 2013).

²⁸⁷ See *Sixteenth Report*, 28 FCC Rcd at 3875-76 ¶ 266 & Table 37.

²⁸⁸ See *id.* at 3880 ¶ 271.

E. The *Sixteenth Report* Again Errs in Using Profitability an Index of Competition

The *Sixteenth Report* also erred in relying on “profitability” to assess the competitiveness of the wireless market. The *Sixteenth Report* acknowledges that “accounting-based indicators of profitability are not estimates of economic profit, and neither accounting nor economic profits are considered reliable estimators of market power.”²⁸⁹ However, it then ignores these problems, spending nearly six pages discussing accounting profit. In other words, the *Sixteenth Report* recognizes that accounting profit is irrelevant but addresses it anyway, presenting five separate charts and graphs to underscore its findings.²⁹⁰

As former FCC Chief Economist Michael Katz has explained, accounting profit is not relevant to questions of competitiveness: “It is well-recognized among economists that accounting measures of profitability are ill-suited for gauging competitive intensity. There are several well-known ways in which accounting profits diverge from economic profits. This divergence is a serious issue because economic profits are the measure relevant to the assessment of market performance.”²⁹¹ Moreover, as Katz explains, “[e]ven if it were possible to estimate economic profits accurately, the existence of positive economic profits does not indicate that competition is ineffective or that regulatory intervention is warranted.”²⁹² Empirical research

²⁸⁹ *Sixteenth Report*, 28 FCC Rcd at 3888 ¶ 284 (internal citations omitted).

²⁹⁰ *See id.* at 3888-3891 ¶¶ 284-89.

²⁹¹ Michael L. Katz, *Measuring Effective CMRS Competition* ¶ 5 (July 13, 2009), attached as Exhibit A to Reply Comments of AT&T, WT Docket No. 09-66 (filed July 13, 2009) (emphasis omitted).

²⁹² *See id.* Similarly, as Carl Shapiro (former Assistant Attorney General for Economics at the Department of Justice Antitrust Division) testified before the Antitrust Modernization Commission, “[I]t is an error to infer genuine antitrust market power based on the gap between price and marginal cost. This error may be more common or more pronounced in innovative industries The gap between price and marginal cost provides a necessary return to cover various fixed costs, including R&D costs in innovative industries and the ‘first-copy’ costs in content-based (continued on next page)

confirms that accounting profit is not a reliable indicator of market power.²⁹³ Notably, attempts in the 1970s to base a competition enforcement program on the relationship between concentration and profitability were strikingly unsuccessful.²⁹⁴

Accordingly, the *Sixteenth Report* erred by attempting to use accounting profit as an indicator of competition in the market for mobile wireless services. The *Seventeenth Report* should dispense with any discussion of this inherently flawed metric.

markets. The key point to bear in mind here is that the competitive price can easily and significantly exceed marginal cost.” Carl Shapiro, Antitrust, Innovation, and Intellectual Property, Testimony before the Antitrust Modernization Commission, at 7 (Nov. 8, 2005), <http://faculty.haas.berkeley.edu/shapiro/amcinnovation.pdf>.

²⁹³ See William E. Kovacic, *Failed Expectations: The Troubled Past and Uncertain Future of the Sherman Act as a Tool for Deconcentration*, 74 IOWA L. REV. 1105, 1136-39 (1989) (discussing scholarship on issue); Almarin Phillips, *Market Concentration and Performance: A Survey of the Evidence*, 61 NOTRE DAME L.REV. 1099, 1102-03 (1986).

²⁹⁴ William E. Kovacic, *Failed Expectations: The Troubled Past and Uncertain Future of the Sherman Act as a Tool for Deconcentration*, 74 IOWA L. REV. 1105 at 1108 (“Never in antitrust history has so massive a litigation program yielded such disappointing results. Most of the government’s deconcentration cases either collapsed before trial or failed to establish liability.”).

VI. CONCLUSION

A broad range of evidence reflects a market in which consumers pay less for more capability, while innovation fuels further innovation. As these comments demonstrate, competition between and among providers of wireless services, devices, operating systems, applications, and content is resulting in ever greater consumer value. Whether considered individually or together, the market segments under consideration here are “effectively competitive” for the American consumer. The *Seventeenth Report* should find as much.

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